

The Manitoba Horticultural and Forestry Association

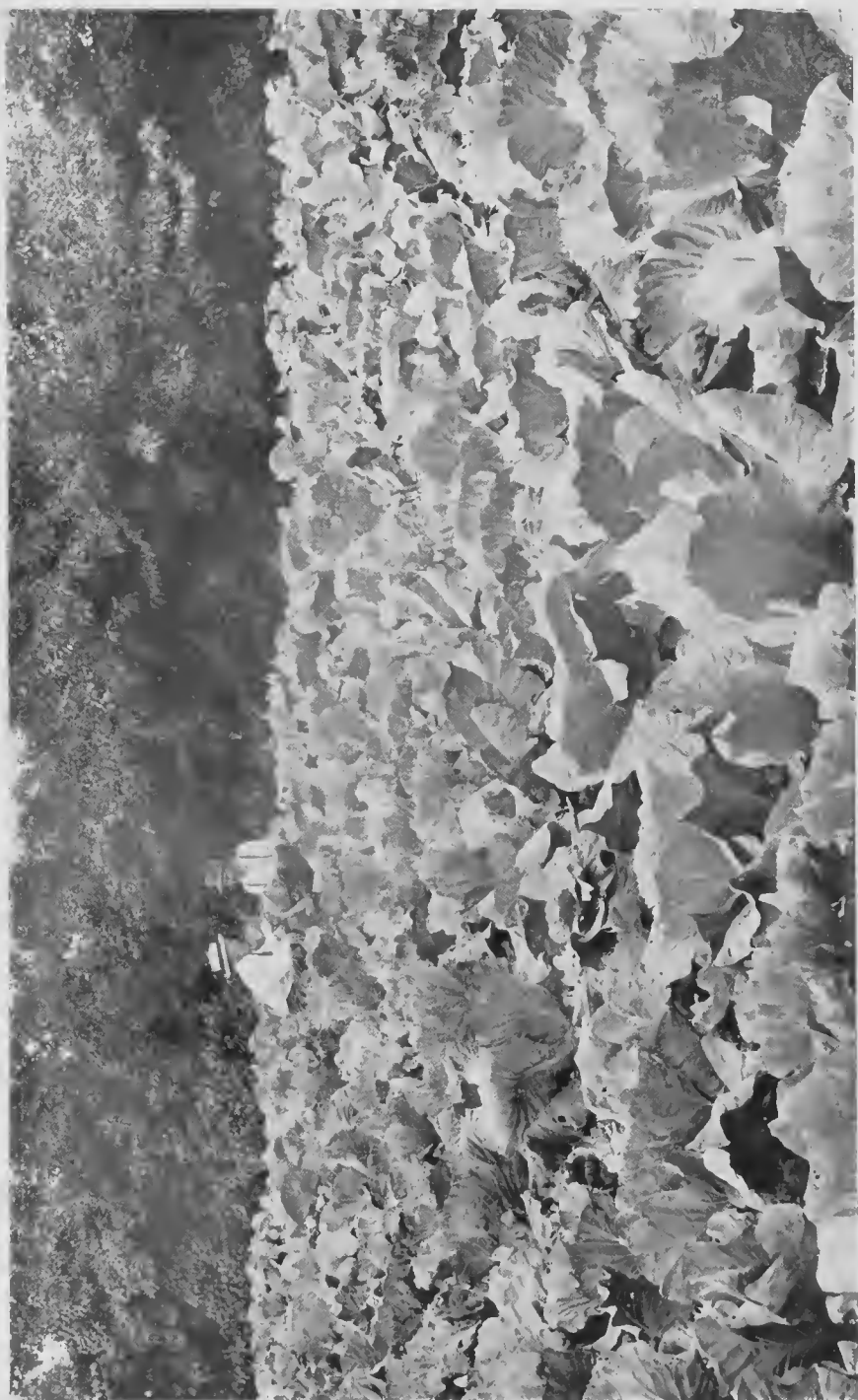
Report for the Year 1918

Volume V of
The Manitoba Horticulturist
For the Year 1918

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At the 1918 International Soil Products Exhibition, held at Kansas City, Mo., Manitoba won first honors with her vegetables.

REPORT FOR THE YEAR 1918 OF THE SECRETARY-TREASURER OF THE MANITOBA HORTICULTURAL AND FORESTRY ASSOCIATION.

To the Members of the Manitoba Horticultural and Forestry Association.

Sirs: As secretary-treasurer of the Manitoba Horticultural and Forestry Association, I beg herewith to submit a brief report of the activities of the association for the year 1918.

The past season has been a satisfactory one from a horticultural standpoint. The rainfall, which was well distributed throughout the growing season, served to stimulate the production of a good yield of fruits and vegetables and bring them to an advanced degree of maturity. The encouragement which had been given early in the season to the greater production movement seemed to promote the growing of vegetables by the residents of our towns and cities, with the result that the total yield of these crops for the province was considerably augmented over that of previous years. Trees and shrubs and other forms of nursery stock planted during the spring made a satisfactory growth during the season. Perennial and annual flowering plants also gave satisfactory returns from the standpoint of bloom.

The work of the association for the year has made very satisfactory progress. The annual convention, which was held in Winnipeg on Wednesday, Thursday and Friday, February 20th, 21st and 22nd, proved a great success. An innovation which met with general approval was a potato conference, which was held by the association in co-operation with the Manitoba branch of the Canadian Seed Growers' Association on Wednesday, February 20th. Many matters of interest to potato growers were discussed, and the conference was, undoubtedly, productive of much good.

Interesting joint sessions were held with the convention of Home Economics Societies and the convention of Agricultural Societies. The papers and addresses delivered at these sessions, as well as those delivered at the open sessions of the convention, proved of great interest to those in attendance. The convention was favored with a much appreciated visit from Professor William Macoun, Dominion Horticulturist, Ottawa, who took an active part in all the sessions. The Minnesota Horticultural Society was represented by Professor McCall, of the Crookston School of Agriculture, and Mr. Lockie Wilson, of Toronto, gave an interesting outline of the work of the Ontario Horticultural Societies.

The reports of the representatives of the local societies, given during the convention, proved of interest in giving an idea of the work that these societies are doing. Practically every affiliated organization had carried out a progressive programme during the preceding year. These local organizations are becoming increasingly valuable in stimulating local horticultural activities, and in fostering a general interest in horticulture throughout the province. During the year, the executive of the association affiliated several groups of members of Home Economics and Agricultural Societies. This increased membership will considerably widen the scope and usefulness of the association.

During the early part of the season the local organizations did valuable work in stimulating local interest in increased production. In most cases they closed their season's activities by holding horticultural exhibitions. A number of these exhibitions were held at points throughout the province and in and around the City of Winnipeg. This series of exhibitions culminated in the Winnipeg Garden Show, which was held in the Industrial Bureau on September 5th to 13th. This show surpassed, both in quantity and quality of exhibits, any previous exhibit of horticultural products ever held in the City of Winnipeg. Officers and members of the association did much to ensure the success of the exhibition by exhibiting, by assisting to arrange the exhibits, and by performing many other useful services.

On August 23rd and 24th, the secretary of the association had an opportunity of attending the meeting of official horticulturists for the Northern Great Plains, held at Mandan, North Dakota. Some of the leading horticulturists of the prairie region of United States and Canada were in attendance. Many matters dealing with the horticulture of the Great Plains region were introduced and thoroughly discussed. The meeting will undoubtedly be productive of good in tending to put our prairie horticulture on a more stable and well defined basis.

The horticultural possibilities of the province were strikingly exemplified in the exhibit of vegetables that was staged in connection with the provincial exhibit at the Soil Products Exhibition of the Dry Farming Congress at Kansas City, October 6th to 26th. This exhibit won first place in the provincial or state competition of collection of vegetables in open competition with exhibits from a number of states of the union. The province also won the first prize for collection of vegetables by any Agricultural or Horticultural Society, and won a large number of prizes in the individual competition classes.

The society offered the following list of plant premiums, each member being entitled to one selection: -

Class "A"

1. Red Currant (1 plant).
2. Black Currant (1 plant).
3. White Grape Currant (1 plant).
4. Raspberry (6 plants).
5. Gooseberry (1 plant).
6. Peony (1 plant).
7. German Iris (2 plants).
8. Columbine (2 plants).
9. Larkspur (2 plants).
10. Perennial Lupines (2 plants).
11. Perennial Gaillardia (2 plants).
12. Sweet William (2 plants).
13. Asparagus (6 roots).
14. Rhubarb (1 plant).
15. Golden Willow (25 cuttings).
16. Laurel Willow (25 cuttings).

17. Common Lilac (1 plant).
18. Japanese Lilac (1 plant).
19. Tartarian Honeysuckle (1 plant).
20. Spirea Van Houttei (1 plant).
21. St. Regis Raspberry (6 plants).

Class "B"

22. Ohta Raspberry (6 plants).
23. St. Regis Everbearing Raspberry 6 plants).
24. Dr. Saunders' Hybrid Apple, Var. Prince (1 plant).
25. Rose (*Rosa spinosissima*) (1 plant).
26. Diploma Currant (1 plant).
27. Scented Thyme (*Thymus odoratissimus*) (1 plant).
28. Clematis ligusticifolia, a climber (1 plant).

A greater selection of premiums was offered to the members this year than in previous years. Two distinct classes were offered, viz.: - well tried classes of plants, and new and promising untried forms. A large percentage of the members of the association availed themselves of the opportunity of securing some one of the premiums offered.

The financial statement of the association for the year is as follows:

Receipts

Balance on hand, 1917	\$ 61.44
Membership fees, 1918	\$273.75

Total	\$335.19
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Disbursements

Plant premiums	\$ 83.85
Postage	47.25
Secretary's honorarium, 1917	25.00
Secretary's honorarium, 1918	50.00
Expenses, Annual Convention	20.15
Express and drayage	13.50
Printing and multigraphing	18.70
Stenography	15.00
Wrapping premiums	7.73
Refund two memberships	2.00
Photography	1.25
Telegrams and exchange	.76

Total	\$285.19
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Balance on hand, 1918	50.00
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Auditor: R. G. Thomson.

The association cheerfully acknowledges the continued financial assistance of the Provincial Department of Agriculture. The department has paid for the printing of the monthly issues of the Manitoba Horticulturist and the bound copies of the Annual Report. Liberal grants have also been given to the various horticultural organizations holding successful horticultural exhibitions. Were it not for the continued support by the department, many of the activities of the association and its affiliated societies would have to be seriously curtailed.

By a special effort on the part of the executive in the early part of the season, the membership of the association has been very considerably augmented. The total membership for the year is 603. This increased membership has served to a marked degree to widen the sphere of influence and usefulness of the association.

The close of the year has seen the close of one of the most momentous and destructive wars of history. We at present stand on the threshold of a new era—an era of readjustment and reconstruction. We are face to face with some of the most difficult social and economic problems that the world has ever faced. The situation calls for the best effort of every individual and every organization. Our organization can be of service by:

1. Continuing to stimulate the production of increased supplies of foodstuffs to fill the world's depleted larder.

2. Continuing to develop an interest in those things in and about the home that tend to make home life increasingly more attractive.

3. Encouraging a consolidated and co-ordinated effort on the part of all those who are interested in the development of our noble heritage—our national agriculture and horticulture.

All of which is respectfully submitted.

F. W. BRODRICK,

Secretary-Treasurer

MANITOBA HORTICULTURIST

Devoted to the better growing of Trees, Fruits, Vegetables and Flowers in Manitoba

Published by The Manitoba Horticultural and Forestry Association

Vol. V.

WINNIPEG, CANADA, JANUARY-FEBRUARY, 1918

No. 1 and 2

A DOUBLE ISSUE THIS TIME

This issue of the Horticulturist is a double number.

There are two reasons. The first reason is that it has been our custom to announce the program for the Annual Convention in the January issue. This year the whole arrangements for "Farmers' Week" have been delayed, partially on account of the railway situation.

The second reason has been that there has been a dearth of readily available material for publication. After the annual convention, with the convention papers on hand, no doubt this will be remedied.

THE PROVINCIAL CONVENTION

Railway Rates

Final announcement of the details of the conventions to be held in Winnipeg during "Farmers' Week," have been delayed considerably on account of the railway situation. For some time it was not known if anything better than a regular return rate could be obtained; but it is now announced that return for one-third of the single fare will be procurable.

To secure this, every delegate to the "Farmers' Week" conventions should pay one way full fare in coming to Winnipeg, taking from the agent at the same time

Ring the Dates on Your Calendar



FEBRUARY 1918

Potato
Conference
February 20

Sun.	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

Horticultural
Convention

February 21
and 22

These are to be the Dates of the

POTATO CONFERENCE

Under Joint Auspices of the Manitoba Horticultural and Forestry Association and the Manitoba Branch of the Canadian Seed Growers' Association, and the

ANNUAL CONVENTION

of the

Manitoba Horticultural and Forestry Association
INDUSTRIAL BUREAU, WINNIPEG

Everyone Welcome

Everyone Welcome

See Full Programme and Particulars in this Issue.

a standard certificate. This will be turned in to the convention secretary as soon as the respective convention opens. will be validated by a railway officer and tendered, with the right amount of cash, to the Winnipeg ticket agent for a return ticket.

As the Horticultural Convention is held late in the week, those coming in to it must not delay turning in their tickets for validation after they come to Winnipeg.

Place of Meeting

As last year, the meeting place for most of the organizations will be the Industrial Bureau in the centre of the city. The Home Economics Societies, however, will meet at the Royal Alexandra Hotel. At the Industrial Bureau the following will be held:—

Seed Growers Meet.

Agricultural Societies' Convention.

Bee-keepers' Convention and Honey Exhibition.

Potato Conference.

Horticultural Convention.

Soil Products' Exhibition.

Special Dinner

A special "Farmers' Week" Convention dinner, with a war-time menu, is being held in the Royal Alexandra Hotel on Wednesday evening at 6.15 p.m. His Honor the Lieutenant-Governor, Sir James Aikins, will preside.

Potato Conference and Horticultural Convention Programs

Attention is directed to the programs for the potato conference and Horticultural Convention on pages 15 and 16. The potato conference is a new feature, the idea behind it being that with the great need for heavy potato production during the war period, so as to release cereals for overseas shipment, concentrated study of the potato problem is profitable. It is hoped that the potato conference may be a means of getting together a good body of matter upon this important question.

Dominion Horticulturist Coming

The programs of both conventions present a strong array of talent, as strong an array as has attended any horticultural meet in Manitoba for many a year. From outside points the most conspicuous figure will be W. T. Macoun, Dominion horticulturist, Ottawa. Mr. Macoun has not for many years been in Winnipeg on such a mission. Prof. McCall, horticulturist at the sub-station at Crookston, Minnesota, will be a delegate whom all Manitoba

horticulturists will be glad to meet.

Likewise, there will be a glad hand for Mr. Straight, who is coming west to take up work at the Dominion Experimental Station at Morden.

Every horticulturist who can do so is invited to come.

EARLY POTATOES

Potatoes can be procured from two to three weeks earlier than normal by placing the seed potatoes in full sunlight about a month earlier than it is customary to plant potatoes. This would be about the middle of April. These potatoes will then produce short thick dark green sprouts that are very tough. At planting time each seed piece should contain at least one of these clusters of buds. The pieces should be planted carefully with the buds upward. It will require only half the time or less for plants to come to the surface of the soil from sun sprouted seed than from normal dormant seed potatoes. The potatoes will thereby be able to make a very good growth during the cool part of the year before the excessive heat of summer. Potatoes which sprout in the cellar, producing long white tender sprouts, should not be used for seed purposes, as they will give poor results. Potatoes of an early variety like Irish Cobbler and Early Ohio should be used to secure best results.—H. O. Werner, North Dakota Agricultural College.

GROW SOME GARDEN SEED IN 1918

"Every Gardener his Own Seed Grower," is the title of a new circular published by the Dominion Experimental Farms.

The gist of the advice given is as follows: "Save now two beets, two carrots, two parsnips, two cabbages, two turnips, five onions and three plants of celery from the winter's supply. Plant these in the spring of 1918, and enough seed should be obtained that year for the needs of a home or vacant lot garden in 1919. Seed will be scarce in 1918. It will be scarcer in 1919. Make sure of a supply by growing your own."

The situation, as outlined by Mr. W. T. Macoun, Dominion Horticulturist, who is the author of the circular, is this:

"Many persons in Canada save vegetable seed every year and find it profit-

Manitoba Horticulturist

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Editing Committee—Prof. F. W. Brodrick, Agricultural College, Winnipeg; J. A. Neilson, Agricultural College, Winnipeg; Geo. Batho, 406 Maryland, Winnipeg.

able to do so. The seed they grow themselves often germinates better than that which they buy and they know that their own seed is from the kind, variety or strain of vegetable which they would like to have again next year. Many market gardeners grow their own strains of tomatoes, melons, beans, peas, corn, etc. These are, however, all annual crops from which seed can be gathered the same year that it is planted. Comparatively few people grow their own seed of beets, carrots, celery, cabbage, onions, parsnips, etc., which require two years to produce seed; but just as satisfactory results can be obtained from these as from the annual vegetables.

"Canadians have been dependent on other countries for most of their seed of biennial vegetables as they have been, to a large extent, with the annual kinds also, but the supply of seed from Europe, whence such seeds mainly come, is now very uncertain and, as it is quite easy to grow one's own seed, it would seem desirable to do so, not so much for the money that would be saved as for the satisfaction of growing the seeds and knowing that they will be available at planting time. In order to encourage the pro-

Kind of Vegetable—	Yield per plant, in ounces.
Beet	2½ to 5½
Cabbage	2 to 5
Carrot	1½ to 2½
Celery	1 to 2½
Onions	¼ to ½
Parsnip	2 to 4
Turnip	5 to 9

duction of home grown seed during this scarcity, prizes might be offered by the different horticultural societies and vacant lot associations for the best seed plants.

"During the years 1915, 1916 and 1917, more attention was paid to the growing of vegetable seed at the Experimental Farm, Ottawa, than in previous years, and considerable information has been gathered from the experimen's

tried. From the results obtained the recommendations presented in the circular are made with confidence that, if the directions are followed, the home gardener will feel well repaid for the little trouble and labor involved. It is not claimed that as good results will be obtained as from carefully selected seed stocks, and it is not recommended to continue growing seeds without selection from year to year, but while there exists such uncertainty in regard to the supply of good seed, it would seem to be worth the grower's while to grow his own seed."

The circular then goes on to give detailed information as to how one should handle seed plants of beets, cabbages, cauliflowers, carrots, celery, onions, parsnips, salsify and turnips.

The matter is simple. The roots to be planted should be sound, not too closely trimmed, either at the crown or roots, and fairly typical.

Enough roots should be saved that if an accident happens one, another will remain.

Set out in the garden in the spring. If there is danger of the plant breaking down, tie it up to a stake. A single row of plants 25 feet long in 1918 will grow plenty of seed for an average home garden in 1919.

Mr. Macoun says:—

"The following table will give some idea of the probable seed yields per plant of the different kinds, the approximate number of seeds per ounce, and the amount of seed required for a hundred foot row. It is sometimes necessary to make more than one sowing and sufficient seed is suggested to make two sowings, if necessary. The figures given are based on results obtained at the Experimental Farm, Ottawa.

Approximate number of seeds per ounce	Quantity of seed usually recommended for 100 ft. row
1,500 to 1,900	2 to 3 ounces
7,500 to 8,500	75 plants
22,000	¼ to 1 ounce
70,000	250 plants
7,000 to 10,000	¼ to 1 ounce
5,000 to 7,000	½ to 1 ounce
13,000	½ ounce

Those of our readers who wish to learn more on this subject, should write W. T. Macoun, Dominion horticulturist, Ottawa, and ask for Special Circular No. 12.

Make your plant premium selection as early as possible, being sure to renew your membership for 1918 at the same time.

WINTERING VEGETABLES

Suggestions by W. T. Macoun, Dominion Horticulturist, Ottawa

(Reprinted from "Seasonable Hints")

The importance of preventing any waste of vegetables and fruit this year cannot be too frequently brought to the attention of those who live in towns and cities and even those who live in the country. The farmer, who usually has a good cellar in which to store his produce, may not need to receive the same advice or seasonable hints in this regard

such conditions are sometimes difficult to obtain. In order that the surface of the potatoes can be kept dry and in the best condition to avoid rotting, provision should be made for air to pass underneath and through them. If they are stored in considerable or large quantities, such provision is made by keeping the potatoes about six inches off the floor by first putting down a slatted temporary floor with the boards just close enough so the potatoes will not fall through and a similar slatted temporary wall a few inches from the permanent wall would permit a still freer circula-

CULTIVATION OF BACK YARDS AND VACANT LOTS

From the Canadian Food Bulletin

Every back yard should be used for the cultivation of fruit and vegetables. Suburban areas should be utilized for food production. Much could be done by individual households if people only realize the desperate seriousness of the situation and the fact that every ounce of food is a necessary and important contribution in the fight against defeat. Hundreds of thousands of men and women, boys and girls could spare a short time each day to cultivate a garden and thus to grow food which would release other food commodities for shipment overseas. The staffs of industrial establishments, both office and factory, could do much by organizing clubs to cultivate vacant areas near their own places of employment or vacant lots elsewhere in the municipality. Girl Guides and Boy Scouts could also make a real contribution towards relief of the situation. In this way a large part of the requirements of cities and towns, in so far as vegetables are concerned, would be supplied by back yard and vacant lot cultivation, so that market gardeners could use their land in part for grain crops.

City cultivation received a very important stimulus last year. Amateur gardeners will be more efficient this season and splendid results should be obtained if the people will understand that every vegetable and every ounce of other food which they can produce from city land frees labor and developed land for the production of grain for export to the Allied armies and peoples.

as do those in the cities and towns, but, knowing the importance of preventing waste this year, he should take greater care of his crop. More frequent picking over than usual of the vegetables which are stored, and particularly potatoes, will ensure a minimum amount of loss from rotting.

Many persons will have vegetables to store this year who have usually been in the habit of buying them as needed. The problem has already arisen in many cases, no doubt, as to how best to preserve, until required, the crop which has been grown.

Potatoes keep best in a cellar which is moderately dry to dry, well ventilated, and where the temperature can be kept between 32 deg. and 40 deg. Fahr., but

tion of air. Keeping them in crate-like boxes with openings between the boards on tops and sides is a good method. If potatoes already stored are at all wet it will pay to take the precaution of getting air through them in some way lest they should rot.

Beets, parsnips, carrots, salsify, and turnips keep best under conditions somewhat similar to potatoes, though it is not so important to keep them dry. Indeed, in the average cellar, they are liable to become too dry and lose their firmness. If there is danger of this, they will be found to keep better if they are packed in clean, dry sand and taken out as wanted.

Onions are very liable to rot unless kept in a dry place. Keep them spread

out as thinly as possible. An attic room where there is no frost will be found a good place to store them.

Cabbage will soon wilt in a warm, dry cellar. Keep them outside as long as possible by protecting them with leaves, straw, or soil. Where the air is very dry they keep better with the roots and stems left on, and wrapping each head in a newspaper should prevent wilting to some extent.

Celery needs a moderately dry, well-ventilated cellar for best results. The celery should be planted in rows close together in sand, or light soil, separating each row with a lath or other piece of wood to keep the tops somewhat apart and better ensure a circulation of air. The soil should be kept moist but the tops dry. Avoid wetting the leaves and stalks if watering is necessary.

Apples—It is difficult to keep apples for any length of time in an average town house, as the temperature of the cellar is usually too high. For best results, apples should be kept in as low a temperature as possible without their freezing. Between 32 deg. and 38 deg. Fahr. is a good range. A cellar which is inclined to be moist is better than one very dry, as in the latter the fruit is liable to wither and lose its crispness. If one has not a suitable cellar, the coolest place in the house where it does not freeze should be chosen. If each apple is wrapped in paper and the fruit kept in closed boxes or barrels they will keep much better and be crisper than if they are left exposed to the air. Dirty receptacles should not be used in which to store the apples, as these often impart an unpleasant flavor to the fruit.

Try at least one new vegetable and one new flower in your garden every year.

Seeds are likely to be scarce enough this season, and there is greater reason than ordinarily for ordering them early.

If you have a strawberry plot and have not yet covered it, this work may still be done. Clean straw may be spread over the snow. The straw covering will prevent the thawing and freezing in the spring, and the straw can be left on a couple of weeks after the strawberries would be growing if uncovered. This holding back the berries with the straw mulch oftentimes delays the blossoming enough to escape a frost and so saves the berry crop.

WHAT FUNGUS DISEASES ARE

In a recent Ontario bulletin entitled "The More Important Fruit Tree Diseases of Ontario," there is a short introductory passage entitled "What Fungus Diseases Are." Though we are not confronted with the same problems as exist in Ontario, and do not practise the spraying of trees in the same way, an understanding of the nature of the fungus diseases is still of interest to us. The passage referred to says:—

"The majority of the diseases of fruit trees are what are known as fungus diseases. It is important that those having to deal with them should understand fully the causes of such diseases, in order that they may apply intelligently remedies for their control. Fungus diseases are caused by plants known as fungi. These plants, unlike ordinary flowering plants, have no green coloring matter (chlorophyll), and are unable therefore to manufacture their own food. All their nourishment must be obtained from decaying animal or vegetable remains or from living animals or plants. Those fungi which derive their nourishment from living plants in so doing injure them in various ways and thus give rise to what are known as fungus diseases.

"The bodies of fungi which cause plant diseases are usually very simple, consisting of very fine, delicate, thread-like structures (hyphae), some of which become modified and produce reproductive bodies called spores, which may be considered similar to the seeds of flowering plants. Sometimes the fungus threads live upon the surface of the plants and obtain their nourishment by sending down little suckers (haustoria) into the cells below. Most frequently, however, they live within the plants, either in or between the cells. Two kinds of spores are frequently produced—thin-walled summer spores, which spread the disease during the growing season, and thick-walled resting or winter spores, which serve to carry the disease over the winter. Spores are scattered by various agencies, chief among which are wind, water and insects. On coming in contact with a suitable host plant they send out little threads (germ-tubes), which enter the plant through the breathing pores on the leaves (stomata), through the skin or through wounds. Once within the plant the little threads grow very rapidly, drawing their nourishment from the cells of the host plant

and setting up a diseased condition.

"Generally speaking, in combating fungus diseases methods of prevention only are practicable. Once a fungus is within the plant nothing can be done to destroy it. Spraying with lime-sulphur, Bordeaux mixture or other fungicide is not done to cure but to prevent disease. In other words, the object of spraying is to cover the surface of the leaves, fruits or other parts of the plant with a substance poisonous to the spores of fungi, in which they cannot grow and penetrate the plant. Spraying, therefore, in order to be effective, must be timely and thorough. The spray mixture must be on the tree before the spores reach it and the surface of the leaves, fruit and other parts of the plant must be completely covered so that there is not the smallest space on which a spore can germinate."

THE VALUE OF SOME MAMMALS AND BIRDS AS DESTROYERS OF NOXIOUS INSECTS*

Reprint of an Excellent Article by Norman Criddle (our own Manitoban Expert Naturalist).

In the year 1913, being busily engaged in the task of collecting June beetles (*Lachnosterna* spp.) for breeding purposes, I had occasion to visit nightly a favorite locality for those insects, the time being from dusk to midnight. Here, lantern in hand, I examined the various trees for specimens and often sat watching the insects' habits, collecting such individuals as seemed desirable.

It was not long before I became aware that I was not alone in my searches, and soon it was discovered that another, equally keen in collecting and more expert in discovery, was keeping me company.

The Skunk

To begin with, this companion was only suspected by strange noises among the bushes, but one night hearing the usual snapping of twigs and characteristic "jump, jump," among the leaves, approaching nearer, I waited silently out of sight, and then what should appear within a few feet, but a fully mature female skunk. She was startled, as I flashed the lantern light into her face, and made off, but afterwards, in the course of a few weeks we became

more friendly, and I was privileged to watch her work. It was interesting too, to see how she jumped at the clumsy, buzzing beetles, either knocking them down with her front feet, or securing them before they had time to rise. Of course, I only saw her now and then, and that was generally while I was sitting or standing still, but I gained sufficient insight into her ways to see that she made a very fair meal of the beetles, and that without very much trouble. From the fact that she came back nightly, for several weeks, I fancy she too recognized the value of the vicinity as a collecting ground.

Later, when the beetles had vanished for the season, she still returned frequently, now, however, paying all her attention to the grubs, which in searching for she seemed just as successful as she had previously been with their parents, though I was obliged to dig haphazardly to gain the same ends.

This was, by no means, my first experience with skunks as destroyers of insects, but I had never before watched one so closely in the field or realized how much good they could do. Since then I have had occasion to come into close contact with their work as destroyers of white grubs on a number of occasions, to say nothing of their love for grasshoppers, upon which they turn most of their attention during the summer months. As soon as the grasshopper season slackens, however, they return once more to the white grubs and continue feeding upon them until the insects, feeling that winter is approaching, make their way below the skunks' reach.

On a field near Aweme, Manitoba, badly infested with white grubs, two or more skunks were in the habit of visiting each evening to make their customary meal. One of them was probably my old friend, while the others doubtless constituted her family. I only saw odd individuals once or twice, but the evidence of their work was unmistakable. Here over an area approximating eight acres, were found little holes, without doubt the work of skunks. They usually only went to a depth of a few inches, but that was sufficient for the purpose. Making an estimate of the number of holes to a square yard, I found these to approximate slightly more than three. Supposing that each hole represented a white grub, and there is little doubt about this, then the total grubs destroyed, to an acre, would be 14,520. That is to say, 116,160 in the eight

*Contribution from the Entomological Branch, Department of Agriculture, Ottawa. Written in the year 1914.

acres. To anyone not accustomed to skunks' habits, the discovery of white grubs under ground may seem questionable, but not to those who know; as a matter of fact these animals collect practically all their food by scent.

Naturally skunks, like many other animals, do some harm by eating useful insects, in fact they will even relish a *Calosoma* beetle. They also destroy some birds' eggs and occasionally raid a poultry house, but their value cannot, I think, be questioned.

Birds

Writing of white grubs reminds me of another enemy they have to contend against and that is our old and cheery friend the robin. In the east robins are industrious workers on our lawns, the food they seek there being largely earthworms. In Manitoba, however, and westward to the Rockies, earthworms are scarce, but in places at least, there are lots of white grubs, which though located below the ground are, as a rule, discovered with comparative ease by the robins. How they manage it I do not know, but that they do so I have seen demonstrated on a number of occasions, when a small flock made a badly infested field their daily feeding ground before the breeding season commenced.

Flickers and crows also rank high as white grub destroyers in late May. The former, however, do not trouble themselves so much about white grubs when other insects, such as grasshoppers and ants, are available.

It is, however, by following the plough and picking up the grubs exposed that the work of the crow ranks highest. In the open wooded districts preferred alike as breeding places by crows and June beetles, one will often turn up the grubs in large numbers, but in my experience seldom in quantity too numerous for the birds following the plough. A flock of twenty-five or more crows following diligently behind in the furrow, have been my companions through many a day's ploughing in early summer, while in their company were the usual blackbirds and grackles, all occupied in the same task.

A little friend of mine, with, I am sorry to say, a bad name, is also very evident, I refer to the cowbird, with whom, in cheerful impudence, there are few to compare. They have no more fear of sitting upon an animal's back to pick off the flies than they have of running beneath one, or being shoved out of the way by its nose. As destroy-

ers of grubs, they are excellent, but do not eat the larger ones when smaller are available, instead merely squeezing their heads as if desirous that they should be killed at all events.

These are the ploughman's more constant company, but occasionally he will have a graceful flock of gulls as his guests—voracious feeders upon every insect exposed, and a large flock will soon devour all specimens in sight.

In my personal experience, however, I have found crows to be by far the most persistent in their search for insects. They will literally live and feed their young upon cutworms from a badly infested locality, locating the grubs by means of the upheavals so characteristically left when one is working near the surface. Another favorite diet is made up of army-worms when present. During a local outbreak near my home, in 1913, I found that of all birds, crows were most in evidence at this time (August). As is well known, crows in autumn generally collect into large flocks, often of many thousands. One such flock, estimated at 3,000, visited the army-worms daily, particularly when they were crossing a road. Several infested fields were also located by the crows' guidance, the birds having forsaken all other food and flown several miles to partake of these caterpillars. The birds remained on the fields for some weeks after the larvæ had pupated, undoubtedly picking up these latter from beneath clods of earth, etc., which they are experts at turning over and habitually do so in search of insects. How many army-worms a flock of 3,000 crows would devour in two weeks, I will leave my readers to judge.

In describing some of the good qualities of crows, I do not wish it to be thought that I thus acquit them of all crimes. The crow is often a thief, helping himself to a farmer's corn, as readily as he will to eggs or young poultry when opportunity offers. To those of us who have watched his habits carefully, however, the good deeds seem to far outweigh the bad. And, therefore, I include him as an undoubted friend.

Another type of birds, frequently overlooked as destroyers of insects, but preserved at certain seasons on account of their food value and the sport they supply to hunters, are the various species of grouse.

To those who have lived in their breeding areas, it is noticeable that the yearly increase of prairie sharp-tailed grouse

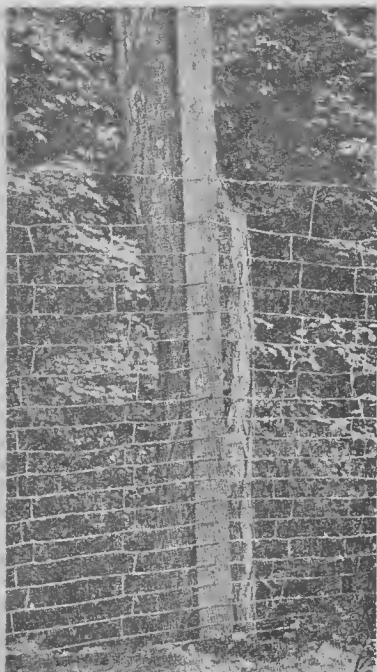
(*Papedioceetes p. campestris*) in the prairie provinces fluctuates from year to year, the variation in numbers, apart from the devastation caused by gunners, being largely due to the food supply, the food in question consisting chiefly of grasshoppers.

Observation shows that an outbreak of locusts is nearly always followed by the successful maturing of a large number of young grouse. Hence, apart from the evidence acquired through the examination of stomachs, we are led to believe that the young subsist very largely upon such insects. They do not, however, by any means confine themselves to locusts. Caterpillars having smooth skins are consumed, from the largest sphinx larva, to cutworms, armyworms, etc.

As the season proceeds, however, the diet of the sharp-tailed grouse changes, and while they still regard insects as luxuries, they now turn their attention to various grains, particularly wheat, which they occasionally damage to a small extent, though the damage as a

rule does not extend over more than a month, while the injury itself consists of the birds resting upon the stooks and picking out the grains from the heads. By far the greatest portion of the grain eaten at this time, however, is gleaned from the ground, being waste material, and therefore of no value. This grouse is also troublesome sometimes before harvest, when it learns to break down the stems of grain to get at the heads. It is conceivable that if very numerous they might cause considerable damage by this habit, a contingency that does not seem likely to occur, however, under present conditions. They are also objected to occasionally by farmers through choosing one of their fields for a "dancing" ground in the spring months, when perhaps half a hundred males will collect for their morning and evening maneuvers, thoroughly trampling down an acre or more of land.

Of course, all their little depredations are insignificant when compared with the birds' usefulness as destroyers of



There is a proper and improper way of attaching wires to growing trees. When the wires are wound around the trees, they soon become embedded, and damage or may even kill the tree. When a scantling is spiked to the side of the tree, and the wire fastened to that, very little damage is done the tree.

noxious insects, and their value for food purposes.

The pinnated, or square-tailed grouse (*Tympanuchus Americanus*) is another with habits very similar to those of the sharp-tailed. It, however, chooses the open country for its home, whereas the latter prefers open woodlands.

The food habits of the ruffed grouse (*bonasa sp.*) are much more in question than those of the species mentioned above, for while they undoubtedly devour many caterpillars and other noxious insects during summer time, they feed very largely upon buds in winter, often almost stripping trees, particularly those of poplar, besides badly damaging lilacs and other shrubs. It may be said, however, that the buds eaten are usually flowering ones which in poplars are

have stings or look so like bees or wasps as to readily pass for them. On the other hand a great many pests are large, such as orthoptera and lepidoptera, and are thus more likely to attract attention. Of course a bird in seizing a grub may unwittingly destroy half a hundred parasites and so do harm, on the other hand it may go further and kill hyper-parasites which prey upon true parasites.

There is no doubt that many bird lovers go too far in their claims of bird usefulness just as some entomologists go to the other extreme in minimizing their usefulness. As a matter of fact, many of our worst pests are hardly influenced at all by birds. I may cite as an example the Hessian-fly, and other small insects. It is also generally a

Renew Your Membership

Have you renewed your membership to the Manitoba Horticultural and Forestry Association for the year 1918? If not, will you please use the blank form sent out with this issue (announcing the Plant Premiums), and forward your membership for 1918

AT ONCE

larger than leaf buds, thus the trees suffer to a comparatively small extent. This argument cannot be used, however, in the case of lilacs, which should be protected by wire netting.

Naturally such injury is confined to the vicinity of wood lands which are the birds' natural homes. Probably the summer food taken fully compensates in value for the damage done in winter time, but more definite evidence is required to make sure. Of course, the bird is much relished as food and on this account alone is well worthy of being preserved.

There is one thing that may be said in regard to the status of birds as destroyers of insects. A great many useful insects are very minute and would thus escape detection. Others

mistake to consider birds of first importance in the suppression of severe insect outbreaks. They doubtless help, the cases cited above being a few examples, but they are far behind predaceous and parasitic insects in such work. Their aid, however, is far greater when pests exist in normal numbers. Then, by keeping them so, by picking off the surplus, they are accomplishing much in retaining the balance of nature.

A large weed may use as much as a barrel of water. A plant weighing one pound when dried has used up 700 to 800 pounds of water in making its growth, or 70 to 80 gallons, making nearly two barrels. From this it is plain that cutting down weeds is a very good way of saving moisture for the crop.

DR. HEWITT HONORED

Dr. C. Gordon Hewitt, F.R.S.C., Dominion entomologist and consulting zoologist of the Department of Agriculture, has, according to a recent press despatch, been awarded the gold medal of the Royal Society for the Protection of Birds. At the same time he was elected an honorary fellow of the society "in recognition of eminent services to the cause of bird protection," in England and Canada.

A NATIONAL FLOWER FOR CANADA

At the annual meeting of the Ontario Horticultural Association, held in Toronto on Nov. 22nd, 1917, a resolution was adopted that it was proposed should form the basis of action to obtain for Canada a national flower. The subject was brought up by Mr. F. E. Buck, president of the Ottawa Horticultural Society, in the form of a report of the action that had been taken by the Ottawa Society during the past year. Mr. Buck presented two aspects of the question which the Ottawa committee considers deserve special consideration. The first is that this question of a national flower is one which interests, besides horticultural societies, other bodies of individuals, such as botanical departments of universities, educationists and students of colleges and schools. It is, therefore, felt that, to a large extent, such would be more easily approached through this central committee and with that point in mind the committee has already written to the Minister of Agriculture to obtain governmental support for the question, and to obtain permission to use *The Agricultural Gazette* as one means of getting into touch with educational institutions, etc.

The other aspect which it is desirable to emphasize is that the initial work should be undertaken by the horticultural societies, because such societies are naturally trustees of the nation's sentiments in such a matter. They should, therefore, take immediate steps to see that the burial grounds in Flanders of Canadians who have fought and died that we might retain the right to possess national sentiments and ideals, are made spots where native flowers shall blossom and remind those who visit those burial grounds of the glories and beauties of the country for which the dead gave up their lives, and that, amongst the burial

places of those honored dead, those of our sons shall be suitably clothed and perfumed with simple but enduring tributes from the Homeland.

The report, as presented, gave the principal reasons why a national flower is desirable and suggested a plan for its selection:—

Reasons for a National Flower

- (1) Nearly all other countries have national flowers.
- (2) A national flower signifies national personality and sentiment.
- (3) As a national emblem it becomes like a nation's flag, the golden cord binding together historic events and national incidents.
- (4) It has a definite value similar to the value of a state seal.
- (5) The selection of such a flower will encourage an increased interest in Canada's wonderful flora.
- (6) A national flower on the graves of fallen Canadians in Flanders will be as a perpetual banner over our noble dead.

Plan of Selection

For the purpose of obtaining the national mind as to which flower should be selected for this purpose the following plan is suggested:—

- (a) The presentation of the claims of certain flowers to as many individuals as possible.
 - (1) Through horticultural societies, educational institutions, etc.
 - (2) Through the medium of the Press.
 - (b) by means of local committees named or appointed by horticultural societies and educational authorities.
 - (c) The will of the people expressed in a majority vote to form the basis of definite action.
- (1) Through a central committee at Ottawa.
- (2) Which in turn will hand over its work to a Minister of the Crown to deal with the matter through legislative enactment.

The report named the following six flowers and gave the characteristics of each with respect to nativity, attractiveness, ease of cultivation, propagation and season of bloom: Columbine, Perennial Aster, Trillium, Iris (flag), Delphinium, Peony.—From the *Agricultural Gazette* of Canada.

The annual report of the Association for 1917—a volume of close to 100 pages—will shortly be ready to mail. Renew your membership for another year, and make certain of your copy.

GARDENING PROJECTS OF THE BOYS' AND GIRLS' CLUBS

The Manitoba Boys' and Girls' Clubs will again give considerable attention to gardening in 1918. The suggested prize schedules, submitted for adoption by local organizations, include the following sections:—

White Potatoes.
Red Potatoes.
Other Variety Potatoes.
Table Carrots.
Table Beets.
Table Turnips.
Mangels.
Field Turnips.
Large Onions.
Pickling Onions.
Parsnips.
Field Carrots.

In addition to the above, a good class to add would be one for the best seed laden branch of such plants as carrots, beets, parsnips, turnips or cabbage. The boys and girls could not only grow vegetable seeds enough for the whole farm garden next year, but both they and their parents would learn something about the second year behavior of some common biennial crops not usually carried on to the seed production stage.

STRAWBERRIES

Many strawberry plants are lost every year through ordering from distant nurseries. Strawberry plants are about the least satisfactory stock the nurseryman ever handles. They heat in transit, and unless carefully set out, a large number of living plants die from being set either too high or too low. The ideal way to transplant strawberry plants is to move them only a short distance on a cloudy day.

VALUE OF FRUITS AND VEGETABLES IN THE DIET

By Miss Elizabeth Nickerson, State Leader, Home Economics Demonstration Agents, Curtis Court, Minneapolis

Recollections of the sulphur and molasses and the spring bitters that appeared with such striking regularity in our family midst, are becoming less impressive year by year. Thanks to the improved facilities for shipping and the advanced methods for production and storage, the season for fruits and vegetables has been greatly extended, and

the family diet has been proportionately improved. In the midst of this varied diet, which we now enjoy throughout the year, we can face the memory of one "spring dose" without trembling, and admit the disagreeable fact that it was a necessity in those days. Following the long winter season when dried foods predominated and meats were in abundance, a readjustment of the diet was necessary until nature should restore normal health by providing green stuffs and fresh vegetables.

Fruits and vegetables serve two purposes in the diet: they not only supply much needed mineral salts to the body to build up bone tissue and regulate the life processes of digestion and circulation, but they add much food value and so give the body more fuel for its activities. They fall easily into two classes, the flavor fruits and vegetables, in which water predominates, leaving only a small percentage of food nutrients; and the food fruits and vegetables, which have a fairly high nutritive value and may be substituted for other carbohydrate or protein foods. Potatoes, corn, bananas, peas and lima beans contain from 22 per cent to 32 per cent of nutrients, chief of which is carbohydrate in the form of starch. Hence, these may all be used interchangeably in the diet, and a more liberal use of each should be encouraged to conserve the wheat in our present need. It must not be forgotten that these also contain some protein and so add to the sustaining power of the diet. While in corn and potato this amounts only to 2 or 3 per cent, in the beans and peas the protein is much higher, and these can be used to replace meats to a certain extent.

Among the food fruits are apples, grapes, oranges, grape fruits and cherries, which contain from 15 to 25 per cent of nutrients. In these the carbohydrate is in the form of sugar, although this is not always apparent, due to the large content of organic acids which mask the sweet taste. Much value is attached to these acids because in the process of digestion they tend to restore the alkalinity of the blood after a too concentrated diet of meat and starchy foods.

Vegetables such as carrots, beets, parsnips, onions, squash, turnips, spinach, celery and tomatoes are valuable chiefly for the mineral salts they contain, and the bulk which is much needed in the diet. The former have about 9

per cent of carbohydrates largely in the form of sugar, so their food value is assured. Judged by the quantity necessary to make this a real factor, however, their chief value lies in their bulk and salt content.

In the drying and canning processes of preserving fruits, the food value is greatly enhanced. In the case of prunes, figs, dates and raisins the water content is so low as to leave from 70 per cent to 85 per cent of nutrients, the bulk of which is sugar, although both the protein and mineral content are raised above the usual percentage in the fresh fruit. The iron content is quite high in each of these, so a liberal use in the diet is advantageous. In the making of jellies and jams the food value of the fruit is increased many times because of the sugar added to it. In this form, then, they become a valuable part of the diet, not only for the natural advantages of the fruit but for the energy supplied. As spreads for bread these are valuable sources of energy, as well as pleasure, and may at the same time be made to conserve the butter supply.

Canned fruits also have a much higher food value than fresh fruit, the advance depending, of course, on the amount of sugar which has been added in the canning process.

To make our diet conform to our daily needs it must contain fuel for our activities, protein for tissue building and repair, and mineral salts for strengthening bones and tissues and for the regulation of body fluids. At the same time there must be a certain amount of bulk or indigestible fibre which keeps the intestinal tract in normal condition. Fruits and vegetables serve all of these purposes. While in some the source of energy is fairly high and in others the protein content predominates, their chief value is their addition to the diet of bulk and mineral salts that are otherwise likely to be neglected. A study of many family dietaries has revealed much too low a supply of calcium, iron and phosphorous, and shown the need for a much more liberal use of fruits and vegetables which contain these in large quantities. Fruits and vegetables also bring pleasant variety into the diet and should be cooked and presented in their most attractive form so as to retain all of their natural color and flavor.

Make the slogan for 1918: *More fruits and vegetables make better health. Plant more—Can more—Eat more!*—(Reprinted from "Minnesota Horticulturist.")

GROWING BIG POTATO CROPS

How can the largest yields be grown? And what are the largest known yields? These questions are easy to ask, but harder to answer.

Geo. A. Sanborn, of the United States Department of Agriculture, in a recent official publication, tells how some farmers raised the largest authentic yields of several crops produced in the United States in 1916.

We will refer only to the potato crop. The United States' average for the year was 80.5 bushels—a light crop, as 1916 gave a good deal of North America light potato yields.

The largest yields were all grown in the irrigable areas, and the five largest were as follows:—

State—County	No. of acres reported upon	Large yield per acre
California—Nevada	1	692.7 bus.
California—Lassen	1½	678.0 bus.
Utah—Utah	1	640.0 bus.
Colorado—Garfield	3	600.0 bus.
Utah—Iron	2	600.0 bus.

As to the methods of cultivation, the author says:—The reports indicate that all of the large yields of white potatoes shown in the table were obtained from irrigated land.

The Nevada County (Cal.) grower writes: "I can truthfully say that the yield stated is correct. I had good seed, plenty of fertilizer, and lots of water. This year (1917) my crop is even better."

The Utah County (Utah) grower writes: "I hereby confirm the report as to the yield of my potatoes in 1916 to be correct, i.e., 640 bushels of 60 pounds each per acre. The land was measured and all of the potatoes therefrom weighed. My methods of production were as follows: Soil, sandy loam with clay and gravel subsoil; fertilizer, old alfalfa stubble turned under in 1915 and planted to oats to allow stubble to decay; preparation of ground for crop, deep early spring plowing in 1916 followed by several thorough harrowings; date of planting, May 6th; care of growing crop, harrowed twice after planting, once before and once after they came up, then thoroughly cultivated until the vines became too large to permit more, irrigated enough to keep the moisture content uniform throughout the growing season; variety, Rural New Yorker; selection of seed, all seed were hill selected in 1915 from vines or hills producing the largest number of uniform disease-free potatoes, all seed tested free from fusarium wilt

and treated with the corrosive sublimate solution."

The Iron County (Utah) grower writes: "This will certify that in 1916 I dug 1,200 bushels of potatoes (weighing 60 pounds per bushel) from 2 acres of land. The ground where the crop was raised had previously grown alfalfa for 20 years. I broke up the ground and applied a good heavy coat of barnyard manure for fertilizer. The potatoes were cultivated every two weeks, as soon as they were large enough, until in bloom, when I irrigated the plants in every row. As soon as the ground was dry enough I cultivated again. The potatoes are known as the Rurals in this country."

ORDER SEEDS EARLY

Never before was there better reason for getting your seed order in early. As garden seeds will be scarce this year, any good seed that has been carried over should be used, but it should first be tested to ascertain its reliability. The seed may be tested by being placed for a few days in a warm place between two damp blotters.

THE KOHL RABI

By A. B. Cutting

Do you like cauliflower? Do you like the cores of young cabbage? Then be sure to include kohlrabi in the list of your garden seeds this spring, for, eaten when small, they are almost identical in flavor. More than that, they can be had long before cauliflower or cabbage is ready for use.

It is a common impression that kohlrabi is fit only for feeding live stock. This is due to the fact that most of the specimens offered for sale are too big and old for table use. Kohlrabi must be used when the size of small apples, never more than three inches in diameter. They can be eaten raw with salt. Chopped fine, with nuts, in a salad, they add the right taste. When boiled or cooked like turnips they afford a dish that is very delicate. It certainly is an excellent garden vegetable, and should be better known; but, remember, it must be used while young and tender.

Kohlrabi produces a swollen stem just above the ground. It is essential that the tubers should be grown quickly and continuously. Successive sowings will furnish a supply all through sum-

mer and fall. Half a packet of seed at a time will be enough for any family. The plants should be thinned to six or eight inches apart in the row. They bear transplanting as well as cabbages. Two of the best varieties for table use are White Vienna and Purple Vienna.

PROFITABLE DUTCH SETS

By V. W. Jackson, Professor of Botany,
Manitoba Agricultural College

To make the botanic garden at the Manitoba Agricultural College productive as well as experimental, some of the things grown last year were grown with a view to being sold for Red Cross purposes. The sum of \$47.00 was obtained from the sale of bouquets to visitors at the College, and a like amount will be realized from two pounds of Yellow Strassburg seed, which was sown on one-thirtieth of an acre. The two pounds of seed cost \$3.50 and was sown thickly in rows two feet apart—one-thirtieth of an acre in all.

Very little attention was necessary, as they only required to be kept clean. No hoeing or thinning was done, and, for the little pains, we obtained 210 pounds of Dutch sets, well cured and dried, and passing through a three-quarter inch mesh sieve. These, at the normal price of 20c. per lb., would give \$42.00, or equivalent to \$1,260.00 per acre. Mr. Patmore asserts having obtained over \$1,000.00 an acre clear on Dutch sets, and it was from him that I obtained the seed, as he said that there was a far greater demand than he could fill for Dutch sets, which, last year, were selling in the country at 30c. per lb.

Our experience last year would prompt us to sow the sets as early as possible in the spring in order to lift them during the late summer, leaving them to dry thoroughly outside. Very little attention is necessary beyond the drying, and one can easily handle an acre in his spare time. There will always be a market for Dutch sets, as I was told, when phoning the Steele, Briggs Seed Company, that they had just imported nine car loads of them. These will be distributed throughout the west this summer.

In a short season, such as we have, there is every reason why some Dutch sets should be sown, as they are so much earlier and more reliable than seed. By sowing the sets, one gets green onions in

from three to four weeks, whereas onion seed would just be coming out of the ground in this time. Then no weeding is necessary, as they are planted their right space apart—usually three inches or four inches—and they can be seen in the rows at all times, permitting the keeping of the soil clean from the beginning.

While we are talking of greater production, and the citizens are wondering what they can grow with profit in their back gardens, Dutch sets should not be forgotten, as it would be difficult to beat the record we made with so little effort.

HOW NEW BIRD PROTECTION WILL WORK OUT

By Dr. C. Gordon Hewitt, Dominion Zoologist, Ottawa

The International Convention for the protection of migratory birds in Canada and the United States, ratified in December last, constitutes the most important and far-reaching measure ever taken in the history of bird protection. It affords the best means of ensuring not only a cessation of the decrease in the numbers of our migratory birds such as the insectivorous birds, the wild-fowl, waders and sea birds, but, in many cases, it assures an increase in their numbers, which have been ruthlessly depleted. It affects over 1,000 species of our chief insect-eating and game birds. It guarantees to the farmer the continued existence of the insect-eating birds, the most powerful and active allies he has in the fight against the destroyers of his crops; and it guarantees to the sportsmen a never failing supply of ducks, geese, and other game birds.

In fulfillment of its obligations under the Convention, the Canadian Government introduced the Migratory Birds Convention Bill to carry out the provisions of the Convention, and this measure has recently passed both Houses of Parliament. As soon as assent is given to the bill, regulations will be promulgated fixing close seasons.

In the case of insectivorous birds, it will be unlawful to kill them or to take their eggs at any time of the year. The close seasons on ducks and geese will not exceed three and one-half months, and the dates of opening and closing will be fixed in accordance with local conditions and after consultation with the proper authorities in the different provinces. On a number of birds, such as the cranes, swans, curlew and most of the shore-birds,

with the exception of woodcock, snipe, certain plover and yellow-legs which are becoming greatly reduced in numbers, a close season of ten years will be provided. The wood duck and eider duck will also be given special protection. Where they are injurious to agriculture or other interests, provision will be made for the killing of protected birds under special permit. Regulations will also be made to prohibit the shipment of migratory birds or their eggs during the close seasons and generally to govern the traffic in them and their eggs.

While the numbers of the migratory birds in Canada and the United States have been most seriously depleted by various causes confidence is felt that, with international co-operation, and, particularly, the prohibition of spring shooting, a gradual increase in the abundance of our wild bird life will take place.—Canadian Forestry Journal.

SWISS CHARD OR LEAF BEET

A type of beet that is one of the best pot-herb plants that we have is Swiss chard, or leaf beet. The root is branched and not very fleshy, while the leaves are large and numerous, with the stalk and midrib fleshy and very large. The stalk is the part that is used for a pot-herb, and, if desired, the leaves may be cooked with them. Chard is cooked and served like asparagus.

The plants are grown in the same manner as the common table beets. The seeds are sown early in spring, and the plants are thinned, as used, until finally they stand ten or twelve inches apart in the row. A full season is required for its maturity, although it will give a supply of edible foliage from early summer until fall. Good varieties are silver and lucullus.

KEEPING GREEN BEANS IN SALT

One method of keeping green beans from summer to winter not often practised, but quite a successful method, nevertheless, is by packing in salt.

The method is very simple. Use a crock. Into this put the bean pods, not too many at a time. When a layer of two inches of pods have been put in, cover with salt, and, by shaking the jar vigorously, fill every crevice with salt.

POTATO CONFERENCE

Under joint auspices of Manitoba Horticultural and Forestry Association and
Manitoba Branch of Canadian Seed Growers' Association

Industrial Bureau, Winnipeg, Wednesday, Feb. 20, 1918

WEDNESDAY MORNING

- 9.10—The Need for Increased Production of Potatoes—J. B. Reynolds, President, Manitoba Agricultural College.
Discussion.
- 9.40—Soil Cultivation Necessary for the Production of a Good Crop of Potatoes—W. C. McKillican, Superintendent, Experimental Farm, Brandon.
Discussion led by J. T. Harrison, Professor of Field Husbandry, Manitoba Agricultural College.
- 10.20—Discussion of Potato Varieties with Recommendations for Manitoba Planting—W. T. Macoun, Dominion Horticulturist, Central Experimental Farm, Ottawa.
- 11.10—What Manitoba Could do to Improve the Potato Crop—S. A. Bedford, Chairman, Weeds Commission, Winnipeg.

WEDNESDAY AFTERNOON

- 1.30—What the Winnipeg District is doing in Potato Growing—S. R. Henderson, East Kildonan.
Discussion.
- 2.00—Registration of Seed Potatoes. How Reliable Seed may be Procured—L. H. Newman, Secretary Canadian Seed Growers' Association, Ottawa.
Discussion.
- 2.40—What is Being Done in a Practical Way to Secure Good Potato Seed in Manitoba—Edward James, Rosser.
Discussion.
- 3.00—The Potato Conference at Washington and its Work—J. H. Evans, Deputy Minister of Agriculture, Winnipeg.
Discussion.
- 3.30—How the Manitoba Crop is being Handled, with Suggestions for Improvement—Thomas Elliott, Dominion Produce Co., Winnipeg.
Discussion.
- 4.45—Potato Insects and their Control—F. W. Brodrick, Professor of Horticulture and Forestry, Manitoba Agricultural College.
Discussion.
- 4.20—Potato Diseases and Their Control—V. W. Jackson, Professor of Botany, Manitoba Agricultural College.

Then add another two inches of pods, and repeat the operation.

When the beans are taken out they will require thorough soaking to remove the salt.

IN TRANSPLANTING TREES

Even yet some people are not educated to the fact that in transplanting trees the branches should be cut back. Last spring one well-known medical doctor in Winnipeg planted a lot of trees without trimming off any limbs. Of course, many of them died entirely, and others lost a part of their branches. The reason is easily found. In digging the tree the greater length of each root is usually cut or broken off, leaving the tree with only stub roots. If the whole top is left on, so many leaves are produced that they will need more moisture than the stub roots can supply. Many failures in tree planting will be avoided if the tops are cut back to correspond to the way the roots are cut off.

CULTURE OF PANSIES

"It is a common notion that pansies require a shady location, and they are often planted close up under trees or on the north side of buildings, where there is little or no sunshine. Pansies delight in a cool, moist climate, but must have a reasonable amount of light and sunshine."

"The main points essential to success are a reasonably rich soil and lots of cultivation. Do not plant on a decided south slope except for early spring flowers, nor so close up to the exposed south side of a building that the heat reflected from the building will cook the plants. Pansies, and in fact but few flowering plants, will do well planted so close up to trees that the trees rob them of fertility and moisture. An ideal location would be where they would receive all the morning sun but shaded in the afternoon. For long continued flowering, keep blossoms removed, and again, cultivate or stir the soil often."—W. A. Toole, in "Wisconsin Horticulture."

Manitoba Horticultural and Forestry Association

ANNUAL CONVENTION WINNIPEG

PROGRAMME

(Programme of Potato Conference on page 15)

THURSDAY MORNING, FEBRUARY 21st

Joint Session with Home Economics Societies
in the Royal Alexandra Hotel

Chairman... MRS. H. M. SPEECHLY

- 9.00—Roses and Hardy Perennials—A. P. Stevenson, Morden.
Discussion led by W. T. Macoun, Dominion Horticulturist, Ottawa.
- 9.30—How the Home Economics Societies and Horticultural Societies may Stimulate Greater Production—Miss E. Cora Hind.
- 10.15—What Women can do in Practical Gardening—Mrs. Dumbriil, Charleswood.
- 10.45—How the Home Economics Societies and Horticultural Association may be Mutually Helpful—George Batho.
- 11.00—Inside and Outside Culture of Bulbs and Tuberous Rooted Plants (illustrated)—Prof. F. W. Brodrick, Agricultural College.

THURSDAY AFTERNOON

Industrial Bureau

VEGETABLE GROWERS' SESSION

Chairman... S. R. HENDERSON

- 1.30—Appointment of Convention Committees.
- 1.45—Vegetable Varieties Suitable for Manitoba—F. W. Hack, Grand Vitis.
- 2.30—Culture of Cabbage and Cauliflower in a Commercial Way—Edward Mancer, West Kildonan.
- 3.00—Celery Culture—George Barratt, St. James.
- 3.30—Marketing the Vegetable Crop—Marchant Bros., East Kildonan.
Business.

THURSDAY EVENING

Open Meeting in Industrial Bureau

Chairman—REV. DR. A. B. BAIRD.

- 8.00—Chairman's Remarks.
- 8.10—Music.
- 8.20—War Gardens and The Garden Show—W. H. Whellams, East Kildonan.

- 8.40—Winnipeg's Interest in Vacant Lot and Back Yard Gardening—George Champion, Superintendent Winnipeg Parks.
- 9.20—Music.
- 9.30—Horticulture in New Zealand (illustrated)—V. W. Jackson, Professor of Botany, Manitoba Agricultural College.

FRIDAY MORNING

Industrial Bureau, February 22nd, 1918

Joint Session with Agricultural Societies

Chairman... S. R. HENDERSON.

- 9.30—Vegetable Gardening from a Commercial Standpoint—C. O. P. Olts, McIita.
- 9.50—The Farm Garden—James B. King, Fairfax.
- 10.10—Evergreens for the Farm—A. P. Stevenson, Morden.
- 10.40—Tree Planting on the Farm—Norman M. Ross, Forest Nursery Station, Indian Head, Sask.
- 11.10—How the Horticultural Association and the Agricultural Societies may be Mutually Helpful—George Batho, Winnipeg.
- 11.20—Standards in Vegetable Judging—Report of the Joint Committee.

FRIDAY AFTERNOON

General and Business Session,

Industrial Bureau

Chairman... GEORGE BATHO

- 1.30—Some New Plant Introductions—F. L. Skinner, Dropmore.
- 1.50—Bush and Small Fruits Suitable for Northern Minnesota—T. M. McCall, Horticulturist, State Experiment substation, Crookston, Minnesota.
- 2.20—Address—E. M. Straight, Acting Superintendent of Experimental Station, Morden.
- 2.40—Experiences in 1917—A. P. Stevenson, Morden.
- 3.20—Some New Hardy Fruits—W. T. Macoun, Dominion Horticulturist, Ottawa.
- 4.00—Reports of Local Societies.
- 4.30—Reports of Committees.
- 5.00—Unfinished Business.

In discussing any topic, speakers are limited to five minutes as a rule, but at the discretion of the Chairman may sometimes claim a longer allowance.

MANITOBA HORTICULTURIST

Devoted to the better growing of Trees, Fruits, Vegetables and Flowers in Manitoba
Published by The Manitoba Horticultural and Forestry Association

Vol. V.

WINNIPEG, CANADA, MARCH-APRIL, 1918

Nos. 3 and 4

WHAT WOMEN CAN DO IN PRACTICAL GARDENING

Paper by Mrs. Dumbriil, Charleswood, Man., before the recent Joint Conference of Home Economics Societies and Horticultural and Forestry Association.

At this time, when labor is so scarce and the farmers are asked to produce all the grain and pork possible, something has to be neglected, and it is usually the garden that comes last in importance. By the time they are through seeding, it is too late to put in some varieties of seeds. Then is the time it falls to the lot of a great many of our women to sow and plant the garden, if it is done at all.

For some it is very hard work, but it need not be if time is taken to plan ahead. Before the time for gardening comes, a good plan is to have a diagram of your garden and mark out just where you want your vegetables, such as onions, parsnips, etc., and how many rows you want. In this way you save much time and worry.

I wonder how many have a seed drill and wheel hoe, or how many know what a wonderful little machine it is. You can put on the hopper and sow all the seed in a day if necessary.

But I would take the onions and parsnips first, for they should be in the ground as soon as the soil is fit to get on. Then at an interval of a week or ten days, the carrots and such hardy seeds can be sown.

All the small seeds can be sown with

the machine, but such seeds as corn, peas and beans can be sown by hand.

After the seed has all been sown, the hopper can be taken off and stored away; the pair of hoes can be attached and you are then ready to go astride the rows of young plants. It is really wonderful the amount of space you can cover in a short time, and without so much backache as in the old way of

bending over a hoe. It makes a very neat job, too.

I would advise having all the vegetables in long rows of about 50 feet in length, if space will permit. This will economize time and labor.

There are also two pairs of cultivator teeth which are easily adjusted to cultivate between the rows.

The only really hard work is the thinning, and even it can be made a little easier by wearing the new overall suits now commonly used. They are very comfortable and do not hamper the movements as do the long skirts, to say nothing of the

washing they save, which is an item not to be overlooked these days.

Be sure, while you are about it, to put in a few extra rows of peas, beans, corn and tomatoes for canning.

Take time to figure where you want the corn and such tall growing plants; then the lower growing vegetables.

Give the rows enough space—that you may go between comfortably. Almost all vegetables can be sown 12 to 15 inches apart, but such as corn, unless the patch be small.

I would advise getting the man of the house to use the horse cultivator at the same time he was running through the

Before the 1st of April

every member should forward his Plant Premium Order to the Secretary. The list of premiums and full particulars appear on page 32 of this issue. Now is the time to

Forward Your Premium Order

potatoes. I would not bother with potatoes; let the men look after that part of the crop; it will be enough if you raise a nice garden of small vegetables.

Some may say: But how am I going to look after so many vegetables when I have my family to care for? Surely one can spare one or two hours a day, and if you do not go at it with a rush, it will surprise you how much you can accomplish in so short a time; and, if well done, there is very little hardship next time. To those who cannot afford a wheel hoe, sowing with a bottle is a good plan. A quill is put through a cork, which is fitted into the neck of the bottle. The seed is sown through the quill. This is quite a common method. But if it is the usual thing for a woman to attend the garden, then, I say, she is justified in getting a machine, for it pays for itself in a short time.

It is not necessary for me to give cultural directions, for all know that they need cultivating, weeding and thinning. The only advice I can give is when to put out your tender plants.

Tomatoes should not be trusted to the open ground until June 1st at the earliest; the 10th would be safer; other plants at the same time unless it is celery and the cabbage family.

To have early tomatoes, take a few plants, and drive a stake four or five feet long beside each plant, and tie the plant to this stake. Go over the plants every few days and remove the laterals, and, if they need it, tie the plant again. By keeping the laterals nipped out, more strength goes into the fruit, and it also allows the sun to get at them. Twenty-five to fifty plants will be sufficient for a good sized family, and allow enough for canning and pickles.

To make your garden more attractive and encourage you to go amongst the vegetables, try a row of sweet peas across the garden. If you cannot afford named varieties, use the mixed. In another part of the garden put asters or any favorite flower and cultivate the same as the vegetables. You will find you will have far more than you need for yourself, and many a bouquet you will have to send to the sick or a friend.

Do not forget the herbs. These are easily taken care of. Gather on a fine day; trim off all the roots, shake them well to loosen any dirt; and hang over a line in a large airy room. When well dried, rub the leaves from the stems; run through a food chopper and bottle.

It is not generally known that the old-fashioned carraway seed can be grown here, and the seed saved for flavoring; and since fruits are so high even these seeds have gone up in price. One friend was telling me she paid 35 cents for $\frac{1}{4}$ -lb., which, before the war, cost her 5 cents. We can raise our own supply from 5 cents worth of seed.

We can also raise the genuine sugar beet. It is easy to make jam from them, using them instead of sugar. You par-boil the beets and skin, then run them through the mincer. Put one-half to two-thirds of the pulp with whatever fruit you are handling. Boil till it becomes thick, like jam. Keep stirring to prevent burning. When thick enough, put in sealers while hot; screw up tight. This will not keep indefinitely when open, like jam, but it is sweet and capital to use for all ordinary purposes.

Another thing we women can do is to raise our own supply of Army beans. So many are needed for our "boys," that the supply is very low. Even the common butter bean will take the place of the commercial bean. I have seen them used for that purpose many a time.

NEW BULLETIN ON ASPARAGUS

"Asparagus," is the title of a new bulletin issued by the Manitoba Department of Agriculture. The authors are J. A. Neilson, B.S.A., until recently lecturer in horticulture at Manitoba Agricultural College, but now connected with Ontario Agricultural College, and Miss E. M. Eadie, professor of Household Science at Manitoba Agricultural College.

The bulletin is well illustrated and is 16 pages in size.

The portion written by Mr. Neilson, covers the following points:—History and Use of Asparagus; Description; Location of Plantation; Soil; Production of Plants; Selection of Plants; Planting; Cultivation and Fertilizers; Cutting; Varieties; Yields; Diseases; Insect Pests. The section written by Miss Eadie discusses the Preparation and Use of Asparagus.

Free copies may be had by applying to the Publications Branch, Manitoba Department of Agriculture, Winnipeg.

There is no more practical form of patriotism than food production.

Manitoba Horticulturist

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Supplied free to all Members of the Manitoba Horticultural and Forestry Association.

Membership in the Association (including free subscription to this Journal) \$1.00 per year.

Editor.—George Batho, 406 Maryland Street, Winnipeg.

THE CONVENTION

In some respects the recent convention of the Manitoba Horticultural and Forestry Association, was the best yet held. The attendance was about as large as usual; the papers were good and the discussions keen, and a great amount of ground was covered.

The presence of W. T. Macoun, Dominion Horticulturist, Ottawa, added greatly to the value of the discussions. Mr. Macoun attended every session, and the breadth of his observation and thoroughness of his information made him a delightfully versatile contributor. Prof. McCall, who came up from Crookston, Minnesota, as the representative of the Minnesota State Horticultural Society, is a new face at our gatherings, and we shall be glad to see him again.

The potato conference proved to be a valuable "short course school" in intensive potato study, and to anyone especially interested in this crop, was well worth going a long distance to attend.

The session with the Home Economics Societies is also worth special comment. Gardening not only makes its usual appeal to a great many women, but most of those present thought of the care of a garden in 1918 as a class of war work that, though it may fall largely to their hands, must not be neglected, but rather speeded up this season.

The resolutions passed and the details of business done are set forth in the official minutes of the secretary, subsequently confirmed by the Board of Directors, as follows:—

Official Minutes

The twenty-first annual convention of the Manitoba Horticultural and Forestry Association, was held in the City of Winnipeg, on Wednesday, Thursday and Friday, Feb. 20th, 21st and 22nd, 1918.

Potato Conference

The opening session was a potato conference, held under the joint auspices of the Manitoba Horticultural and Forestry Association and the Manitoba Branch of the Canadian Seed Growers' Association. Mr. George Batho presided. Many interesting papers and addresses were given, among the more important of which was one on "Potato Varieties," by W. T. Macoun, Dominion Horticulturist, Central Experimental Farm, Ottawa; and another on "The Registration of Seed Potatoes," by Mr. L. H. Newman, secretary of the Canadian Seed Growers' Association of Ottawa.

Prof. Macoun gave an outline of the work of the Potato Growers' Association of America, and of the organization work that has been done in Ontario.

It was suggested that an advisory council be appointed to get the industry organized on a definite basis. The following names were suggested—Prof. W. T. Macoun, Ottawa; John de Graff, East Kildonan; H. C. Whellams, R.R. No. 1, Winnipeg; Mr. H. Stephens, Portage la Prairie; Prof. T. J. Harrison, Manitoba Agricultural College, Winnipeg; Prof. V. W. Jackson, Manitoba Agricultural College, Winnipeg; W. C. McKillican, Experimental Farm, Brandon; Edward James, Rosser; John Crowe, Stonewall; Prof. F. W. Brodick, Manitoba Agricultural College, Winnipeg, and W. J. Harrison, R.R. No. 4, Winnipeg. Moved by Mr. Seymour, seconded by Donald Bell, Rathwell, that these names constitute an advisory council.—Carried.

Moved by Donald Bell, seconded by W. J. Harrison, that Prof. T. J. Harrison be the chairman of that council.—Carried.

It was generally agreed that the conference was a success and would be productive of much good.

Joint Session with Home Economics Society

The opening session of the horticultural convention proper was held as a joint session with the Home Economics Societies in the Royal Alexandra Hotel, on Thursday, Feb. 21st, at 9.30 a.m., with Mrs. H. M. Speechly in the chair. The following programme was presented:

"Roses and Hardy Annuals"—A. P. Stevenson, Morden, Man. Discussion—W. T. Macoun, Dominion Horticulturist, Ottawa.

"How the Home Economics Societies and Horticultural Societies May Stimu-

late Greater Production"—Miss E. Cora Hind, Winnipeg.

"What Women Can do in Practical Gardening"—Mrs. Dumbrell, Charleswood, Man.

"How the Home Economics Societies and Horticultural Association may be Mutually Helpful"—Geo Batho, Publications Branch, Department of Agriculture, Winnipeg.

"Inside and Outside Culture of Bulbs and Tuberous Rooted Plants" (illustrated)—Prof. F. W. Brodrick, Manitoba Agricultural College, Winnipeg.

Mr. George Batho, president of the Horticultural Association, explained to those present the steps proposed to be taken to amend the Act of incorporation to allow the affiliation of local home economics societies or agricultural societies, or groups within these organizations.

These joint sessions are undoubtedly productive of much good in bringing these organizations more closely together.

Vegetable Growers' Session

In the afternoon the Vegetable Growers' session was held in the Centre Hall of the Industrial Bureau. On account of the unavoidable absence of the chairman, Mr. S. R. Henderson, the president, Mr. Geo. Batho, occupied the chair. A very interesting programme dealing with various phases of vegetable gardening was presented. The following papers and addresses were given:—

"Vegetable Varieties Suitable for Manitoba"—F. W. Hack, Grand Vital.

"Celery Culture"—George Barratt, St. James.

"Marketing the Vegetable Crop"—Marchant Bros., East Kildonan.

A very interesting discussion arose out of these papers, particularly the paper on vegetable varieties.

Committees—At the close of the session, the President named the following convention committees: Nominating—W. G. Scott, W. J. Harrison and F. W. Brodrick. Resolutions—H. W. Watson, A. P. Stevenson and H. C. Whellams.

The question of vegetable storage was briefly discussed, but the report of the special committee was left over until the afternoon session on Friday.

A brief discussion was held as to how the association could be of more assistance to the vegetable growers.

Evening Meeting

On Thursday evening, a very successful open meeting was held in the Indus-

trial Bureau, at which the Rev. Dr. A. B. Baird was chairman.

An interesting paper on "War Gardens and the Garden Show," was presented by Mr. H. C. Whellams, East Kildonan, Man.

Mr. George Champion, superintendent Winnipeg Parks Board, gave a valuable paper on "Winnipeg's Interest in Vacant Lot and Back Yard Gardening."

These two papers created an interesting discussion, indicating that the question of war gardens is an important one at the present time.

Mr. Champion's paper was followed by an illustrated address on "Horticulture in New Zealand," by V. W. Jackson, professor of botany, Manitoba Agricultural College.

Joint Session with Agricultural Societies

On Friday morning a joint session with the agricultural societies was held in the Industrial Bureau, with Mr. S. R. Henderson as chairman.

A paper on "Vegetable Gardening from a Commercial Standpoint," was given by Mr. C. O. P. Olts, Melita, Manitoba. Mr. A. P. Stevenson, of Morden, Manitoba, gave a talk on "Evergreens for the Farm," which was followed by a discussion on "Tree Planting on the Farm," by Norman M. Ross, Forest Nursery Station, Indian Head, Sask. On account of the absence of Mr. James B. King, of Fairfax, Manitoba, his paper on "The Farm Garden," was presented by Mr. H. W. Watson. Mr. George Batho briefly presented a statement of how the horticultural association and the agricultural societies may be mutually helpful.

The secretary then read the directors' report for 1917 which, on motion of Robert Fisher and H. W. Watson was adopted as read.

The report of the special committee on standards of judging vegetables was then presented for later consideration.

Fruit and Business Session

On Friday afternoon a general and business session was held with Mr. Geo. Batho as chairman. An outline of "Some New Plant Introductions," was presented by Mr. F. L. Skinner, of Dropmore, Manitoba. Mr. T. M. McCall, horticulturist, state experiment sub-station, Crookston, Minnesota, gave a talk on "Bush and Small Fruits Suitable for Northern Minnesota." Mr. A. P. Stevenson, of Morden, then related his experiences in 1917, outlining his experience with various fruits.

Mr. Stevenson was followed by Prof.

W. T. Macoun, who reviewed his experiences with the fruits mentioned by Mr. Stevenson, and outlined the work which is being done in the introduction of new fruits by the experimental farms.

Mr. Lockie Wilson, superintendent of agricultural and horticultural societies for the province of Ontario, gave an interesting outline of the work that the horticultural societies are doing in Ontario, and offered some valuable suggestions for the improvement of the work in Manitoba.

After Mr. Wilson's address, the regular business meeting was held. The report of the secretary-treasurer for the year 1917, with the auditor's report, was presented. Moved by H. W. Watson, seconded by E. J. Reynolds, that this report be adopted as read.—Carried. (This report has been printed in the 1917 annual report.)

Moved by S. R. Henderson, seconded by W. J. Harrison, that the minutes of the last annual meeting be adopted as read.—Carried.

The report of the special committee on storage, appointed at the last annual meeting, and consisting of Robert Winning, Berton, Man., W. H. Coulter, R.R. No. 4, Winnipeg, and F. W. Hack, Grand Vital, Man., was called for. The members of the committee present reported individually on the progress made. Moved by E. J. Reynolds, seconded by Robert Fisher, that the committee's report be accepted.—Carried.

It was moved and seconded that this committee be continued, but Mr. Coulter and Mr. Hack both asked to be relieved. The following committee was appointed to carry on this work—Robert Winning, Berton, Man., W. J. Harrison, R.R. No. 4, Winnipeg, C. L. Dodds, Leland Hotel, Winnipeg.—Carried.

The report of the special committee on standards for judging vegetables, appointed by the executive, and consisting of Prof. W. T. Macoun, C.E.F., Ottawa, S. R. Henderson, R.R. No. 4, Winnipeg, and Prof. F. W. Brodrick, M.A.C., Winnipeg, was then presented. Moved by F. W. Brodrick, seconded by H. C. Whellams, that the report of the committee be adopted for one year as presented, with the amendment that under early cabbage the first clause should read: "Generally round or heart-shaped."—Carried.

The report of the committee on law amendments, appointed at the last annual meeting, was presented by the president, Mr. George Batho. Moved by F. L. Skinner, seconded by E. J. Rey-

nolds, that the report of the committee be received.—Carried.

Moved by F. L. Skinner, seconded by H. W. Watson, that the name of Dr. Rumball, of Morden, be added to the committee on law amendments appointed at the last annual meeting, and that the committee be instructed to have the Act of Incorporation recast, giving consideration to the question of grants to local societies.—Carried.

A motion asking that the sum of \$20,000.00 be put aside for horticultural purposes, notice of which was given at the last annual meeting, was moved by E. J. Reynolds and seconded by C. L. Dodds. The motion was lost.

Moved by Dr. Rumball, seconded by Robert Fisher, that motion of Mr. Davis, of Neepawa, notice of which was presented at the last annual meeting, be allowed to stand over.—Carried.

The nominating committee then presented its report naming the following as directors for the year 1917:—George Batho, H. W. Watson, W. J. Boughen, A. P. Stevenson, Norman M. Ross, F. L. Skinner, W. J. Harrison, W. G. Scott, F. G. Simpson, George Barratt, James Cocks, Mrs. H. M. Speechly, Henry Downing and F. W. Brodrick.

Moved by S. R. Henderson, seconded by H. C. Whellams, that the report of the nominating committee be accepted.—Carried.

Moved by Dr. Rumball, seconded by Robert Fisher, that Mr. R. G. Thomson be auditor for the year 1918.—Carried.

Resolutions

The committee on resolutions then presented the following report:—

Votes of Thanks.—Be it resolved that votes of thanks be tendered to (1) all that have taken part in the programme, especially Prof. McCall, of Crookston, and Prof. Macoun and Mr. Newman, of Ottawa, and Mr. Lockie Wilson, Toronto; (2) the home economics societies for co-operation in one joint session; (3) the agricultural societies for co-operation in one joint session; (4) Sir James Aikins for entertainment at Government House, and for presiding at the joint dinner; (5) the directors of the Industrial Bureau for use of halls, etc.; (6) the press for report of meetings; (7) the editor of the Manitoba Horticulturist, and those who contributed papers during the past year; (8) our secretary, Prof. F. W. Brodrick, recommending an honorarium grant of \$25.00 for the past year's services, also recommending that the new

directors fix an annual honorarium for fulfilment of these duties; (9) the various committees engaged in constructive reforms during the year, viz., those on storage facilities, standards of judging vegetables, plant premiums and law amendments.

Recommendations

Greetings.—Recommend that greetings be sent to Past President H. M. Speechly, in hospital service, overseas, and Prof. J. A. Neilson, O.A.C., Guelph.

Life Membership.—Recommend that a life membership certificate be presented to our esteemed veteran member, Mr. W. G. Scott, R.R. No. 4, Winnipeg.

Garden Show.—Recommend that for the coming season the officers and directors be advised to assist the provincial garden show held at Winnipeg, and local horticultural exhibitions, as in the past, and to a greater degree if possible.

Summer Meet.—Recommend that the officers and directors arrange for a summer horticultural meet during the third week of July.

Floral Emblem.—Recommend that in response to a request for the selection of a flower as a Dominion emblem, we agree to suggest one—the sweet pea.

Stenographer.—Recommend that at our convention an official stenographer be engaged to report full discussions and proceedings to be incorporated in the annual report.

Re-Modelling Act.—Recommend that the Horticultural Society Act be remodelled along the lines of the Ontario Horticultural Societies Act, and submitted to the Legislature for enactment; and the president appoint a committee of five to carry the matter to a conclusion.

Food Supply.—Recommend that, owing to the shortage of foodstuffs among allied countries, as horticulturists we encourage everyone to produce as much food stuffs as possible during the coming season. Further, that we, as horticulturists, encourage the substitution of vegetables in place of cereals and meats in order that a greater reserve of the latter may be available for export.

Moved by Dr. Rumball, and seconded by Robert Fisher, that the report of the committee on resolutions be received, but that we eliminate the clause naming the sweet pea as a national flower.—Carried.

Moved and seconded that Mr. W. G. Scott, Mr. F. L. Skinner and the secre-

tary constitute a committee on the selection of the name of a flower to be submitted as a national emblem.—Carried.

Local Society Reports

Interesting reports of the work of the local societies were then received.

Mr. C. D. Shephard reported for the Winnipeg Garden Club; Rev. Dr. Rumball for the Morden Horticultural Society, and Mr. McWee for the Morse Place Horticultural Society.

Written reports from the Souris Horticultural Society and from the Morden Horticultural Society, which had been received by the secretary, were accepted as read.—F. W. Brodrick, secretary.

ARRIVAL OF THE PRAIRIE HORNED LARK

By V. W. Jackson, Professor of Biology, Manitoba Agricultural College.

The Prairie Horned Lark was observed this year at the Agricultural College farm on Feb. 22nd, the earliest in eleven years; and this bird, being our earliest arrival, may be taken as the first harbinger of spring. Since 1908 the following has been the date of arrival of the Prairie Horned Lark at Teulon, observed by Mr. Cumming, and our date may be a few days earlier:—March 13, 1908; March 1, 1909; March 3, 1910; March 4, 1911; Feb. 28, 1912; March 7, 1913; March 3, 1914; Feb. 27, 1915; March 2, 1916; March 1, 1917; Feb. 22, 1918.

It will be seen from this record that Feb. 22nd is exceptionally early, as only in three years out of eleven has the bird arrived in February. Those who remember the springs of the last ten years will be able to calculate in how far the arrival of the Prairie Horned Lark is an indicator of an early spring.

The birds have been known to make their nests before the snow goes, thereby proving that their return is calculated and not accidental. The song of the bird is quite cheerful, otherwise it would not be called a lark. The black patch on its breast, and the black stripe through the eye and on the crest of the head, marks it as a relation of the Meadow Lark, which has similar markings. Groups of these birds may now be seen (written Feb. 27th) on almost any country road, and they sing until long after the sun goes down, even into the dark.

VARIETIES OF VEGETABLES SUITABLE FOR COMMERCIAL GROWING IN MANITOBA

Paper by F. W. Hack, Grand Vital, Man.,
at Horticultural Convention in
Winnipeg

Essential Characteristics

The essential characteristics of a good commercial variety are, first of all, that it should be a good cropper in order to give the gardener a good return for his labor. Secondly, it should be of an attractive appearance, so that it may meet with a ready sale. Thirdly, it should be of good quality in order that purchasers, being pleased with the article, may be induced to buy more. The really first-class market variety combines all these qualities, though, in some cases, the commercial value of a variety consists more in earliness than in any of these characteristics.

I may, perhaps, be criticized in giving third place to quality in market vegetables, but my experience is that the average buyer judges them chiefly by appearance, and does not discern between medium and first class quality; and, in spite of the "high cost of living," there is no tendency on the part of vegetable buyers to save money by buying goods of inferior appearance. In fact, appearance is so important that it is a wonder that many of our gardeners do not give it more attention instead of, as is often the case, cutting down the market value of their produce by careless methods of handling.

The Optimism of Catalog Authors

The student of literature, when taking up the study of seedsmen's catalogs, is bewildered with the amazing number of valuable varieties of vegetables and flowers described therein, and, as he further studies, the thought is forced upon him that authors of seed catalogs are, without exception, pronounced optimists who do not know the meaning of the word failure.

Without seeking to cast any doubts upon the veracity of the enthusiasts who write the descriptions of varieties in the average catalog, I venture the assertion that fully half the varieties described could be eliminated with advantage; and if the descriptive matter regarding the remaining varieties were somewhat curtailed, it would economize space and hurt no one. Seed catalogs

are usually free, but their study is often expensive; and the gardener is often induced to try an excessive number of varieties, with the result that his garden is more after the style of a trial plot than is desirable.

While it is highly important that the commercial grower should be up-to-date in the matter of trying out promising new varieties and improved strains of existing varieties, we should not lose sight of the fact that the average grower cannot spare very much time for keeping records and checking up the respective merits of varieties under test. Consequently, it is as well to limit the number of varieties tried. Most of the novelties and new introductions prove to have no merit over existing varieties; though, on the other hand, occasional varieties are introduced which are of exceptional merit. These the professional gardener cannot afford to be without, but, at the same time, the grower should be careful not to discard old well-proven varieties unless he is sure he has something really better.

Variety Not the Only Consideration

In making a list of varieties, sometimes the name signifies very little. It is important that you get a good strain of the variety in question. It is customary to advise growers to get their seed from a reliable source, but it is hard to say what are the reliable sources. There are so many factors that enter into seed production and supply that it is doubtful if there are any really reliable sources.

Besides strain, and trueness to type, an important factor is the locality and climatic conditions in which the seed was produced. Our seeds come to us from all over the world; but there are certain localities that produce seed that will give the best results in this climate. This is particularly so in the case of cauliflower, cabbage, onions, corn and celery. With the tender vegetables, such as corn, cucumbers, tomatoes, beans, etc., ripening the seed in cool northern localities will usually result in increased earliness in the succeeding generations. This is particularly so in the case of corn. There sometimes is a difference of from one to two weeks in the time of maturity from seed of the same variety grown in different localities.

It will readily be seen that in a selection of varieties there are a great many

other things to be considered besides the name only.

Getting Down to Variety Names

I have prepared a list of varieties which my experience leads me to believe are the most valuable for commercial growing. Let us take them alphabetically:—

Asparagus

I have not had a great deal of experience with this vegetable, but find Palmetto as good as any. The so-called Colossal varieties do not show any improvement.

Brussels Sprouts

The only variety I have found to be really satisfactory is Dwarf Gem, introduced by Sutton's, but now obtainable from other sources. This variety can usually be depended upon for a fair crop of solid sprouts, medium to small in size.

Beans

Wax Beans—I prefer Davis' Wax, on account of its attractive appearance and productiveness. The pods are long, straight and uniform. It is a very rapid grower and the pods mature quickly. Consequently they must be picked often, or they soon become old.

Wardwell's Kidney Wax — Another very excellent bean of better quality than the Davis, and it remains in condition longer; not so uniform in color and shape.

Strains of Golden Wax and Black Wax are often recommended for earliness, but I have never found them early enough to compensate for the smallness of the pod.

The round or pencil podded beans, though of excellent quality, are not desirable commercially, as the public imagine them to be old.

Green Beans—There is a growing demand for green beans. Early Six Weeks is a very quick maturing productive bean with long straight pods.

Broad Beans—The best method is to grow your own seed. By choosing the best pods from the most productive plants, a strain will be produced that will crop much better than any seed you can buy. We have followed this method for over ten years, with good results. The stocks of seed offered here usually produce very short bean pods, often producing only one bean. Carter's Levathan is about the best variety purchasable in Canada.

Beet

Early Egyptian is the earliest, but should not be planted for late use, as it loses shape and splits to a large

extent. Crosby Egyptian is a good reliable variety, as it is always of good shape and does not split. The Globe varieties are the best for late fall and winter use. Personally, I like Detroit Dark Red, though there are many other good varieties.

Cabbage

Copenhagen Market—This is an example of a novelty that made good. Introduced only a few years ago, it is now the most popular of all early cabbages. It is the earliest of all the round-headed varieties, a sure header and big and solid enough for any market requirements—the best cabbage to sow in the open ground.

Glory of Enkhuizen—This is another excellent cabbage, very similar, but later and larger.

Neither of these two varieties are recommended for long keeping. For this purpose I like Danish Roundhead or Summer Ballhead. This is a selection of the old Danish Ballhead, which is too late to be generally profitable here. The new type is about two weeks earlier, shorter in the stem, a little flatter in shape and not quite so solid.

Carrots

Chantenay—This combines all the qualities desired in a commercial vegetable, being a good cropper, excellent in appearance and quality—no other variety is required.

Cauliflower

Early Snowball is about the only variety. Henderson's strain used to have the preference, but this strain has broken rather badly during the past two years.

Celery

White Plume is about the only variety for general use. Golden Yellow is not reliable except where some system of irrigation can be supplied, as during dry spells it is very subject to heart rot.

Corn

The best variety I can find is Mammoth Cory White Cob. There is a strain of this variety which produces a thick cob of medium length, which is much earlier than the ordinary Cory. While not such a heavy cropper, it is most desirable, as it usually matures its entire crop while the price is right.

Golden Bantam—This variety has become so popular with the public that the grower cannot afford to neglect it. It is one to two weeks later than Mammoth

Cory. It is a good cropper, but produces a number of small ears. This corn is undoubtedly the best table variety we can produce here.

Another variety of corn that is well worth a place here is an introduction of Burpee's rejoicing in the elegant name of Howling Mob. This variety produces the largest cob of any early variety. It is hardy and will stand earlier planting than the Sweet Cory. The crop usually matures a little later than Golden Bantam, and seems to stand the cold in the fall better than the other varieties. On account of their size and appearance, the cobs of this variety will fetch 15 cents more a dozen than others on the local market.

Cucumber

Improved Long Green is the most popular market variety here. Davis' Perfect is better for the greenhouse.

proved strains of Yellow Globe Danvers or Southport Yellow Globe are recommended. Southport White Globe is the best white onion. It is very handsome, and keeps well if kept perfectly dry.

For the so-called new method of transplanting onions, I recommend Gigantic Gibraltar. This is much better than Prizetaker, which seems to be going back.

Pickling Onions—Barletta is the best variety.

Parsnips

Varieties of parsnip are very similar. I am using a strain of Hollow Crown, which does not grow quite so long, tapering more quickly than the usual type. That makes it easier to harvest, which I consider a valuable characteristic. The nature of the soil on which they are grown determines to quite a marked extent the shape of the roots, so I imagine the nature of the soil on which the seed is grown will have an

Have You Renewed Your Membership for 1918?

Lettuce

I prefer Toronto Gem to any for general. It does about the best of any in the hot weather, and has the advantage that it can be sold either for a leaf or head lettuce. Big Boston is good for a late sowing, as it stands the cold better. Grand Rapids is the best for forcing.

Onions

There are a number of very good varieties, and so much depends upon strain that I would hesitate in putting too much emphasis upon the name. There are two types—the flat and globe varieties. The flat varieties are usually earlier in maturing, but do not crop so well or present such a good appearance. Extra Early Flat Red is a good red variety, being early and a good cropper. Red Wethersfield is larger and a little later, sometimes growing coarse in rich soils. Red Prizetaker is a very good globe variety. In yellow onions the im-

effect upon the shape of the roots grown from that seed.

Peas

Early—The first early round seeded peas seem to have gone out of favor, for, though earlier, this does not compensate for the extra time required to harvest the small pods. There has been a marked advance of late years in the dwarf, large podded type. In this class there are a number of excellent varieties. I would give first place to Laxtonian. This is the largest podded of all the dwarf earlies. It is very dwarf—12 to 15 inches, which economizes space. The pods are always straight and well filled, even till late in the season. The pods are rarely hidden in the foliage, but hang where they can be seen. This characteristic makes them easy to pick, and even late in the season, when the crop is light, the rows can be quickly gone over without having to hunt for the stray pods. Quality is equal to any.

Late Peas—I do not think there is anything yet to beat a good strain of the Improved Stratagem.

Peppers

I do not think these are very desirable for commercial growing, but there is a strain of Early Red Pepper that, I think, is sold by some seed houses under the name of Long Red, but must not be confused with Cayenne. This pepper is well worth growing. It is the best method to save your own seed, and by selection a strain can be developed that will give good results, and red peppers always fetch a good price in the pickling season. This particular strain of pepper is wonderfully early and productive. It is of a cheerful disposition and believes in making the best of things. Immediately it is planted it gets busy producing peppers, and continues as long as the frost leaves it alone. Even last season, after getting several touches of frost in the early summer, followed by adverse conditions and early frosts again in the fall, at harvest many plants no bigger than your hand, would be loaded with peppers. The large sweet peppers I do not think are worthy of much attention.

Pumpkins

I do not think these are worth growing very extensively, as the market is limited. Connecticut Field is a good variety. Jumbo also does fairly well here.

Parsley

I believe it would pay the grower who has much trade for parsley, to grow some of the finer strains instead of sticking to the ordinary Moss Curled variety, of which there are many inferior strains. The best parsley, as far as appearance is concerned, is Dobbies Exhibition.

Rhubarb

I must confess I am ignorant of the merits of the different named varieties of rhubarb. By propagating from the most desirable roots and discarding the inferior, you can work up a stock that will be able to hold its own even without a name.

Radish

I find French Breakfast to give me best results, on account of its attractive appearance. Its fault is that it quickly becomes pithy if left standing. Scarlet White Tip is a popular variety, but with me it does not come uniform in color; the white tip often extends all over the

radish. The all red varieties are not quite so attractive.

Spinach

Victoria is as good as any.

Squash

The Green Hubbard is the only variety of squash much in demand. Golden Hubbard sells moderately well, is a little smaller, earlier, and more productive.

Vegetable Marrow

White Bush is the best commercial variety.

Tomato

Earliana is the best variety for outdoor cultivation. There are a number of varieties listed as being a week to ten days earlier than Earliana, but they generally turn out to be that much later. I have tested many varieties, but a good strain of Earliana beats them all. It is not only early, but the fruit is of good size, shape and quality. It should be borne in mind that earliness in tomatoes depends very largely upon the nature of the soil in which they are grown. On rich, deeply cultivated land they run considerably to vine and are much later. New land with a bit of sod left in it, and not too deeply cultivated, is much to be preferred. In 1916, I had two plots of tomatoes, both Earliana, planted at the same time with the same kind of plant. One plot was on well worked ground, the other on land broken the previous year, and so rough that planting was very difficult. Planting was done on the 12th of June and by August 15th the plot on new land was producing a good crop of ripe tomatoes; the other plot had scarcely a tomato of any kind but some very fine looking vines. The final result was that the new land produced the most profitable crop I ever grew, while the other plot was a failure, as far as profit was concerned. The point I wish to make is that if this had been a test of two varieties, a plot of each, I should have had no hesitation in coming to the conclusion that the variety in the new ground was very much earlier than the other variety.

The same applies to many other varieties of vegetables; it is the condition under which they are grown that largely determines the result.

Turnips

White—I have never made any money out of white turnips, consequently I am prejudiced against the whole family of them, so will not name any varieties.

Swede Turnips—In testing Swede turnips, I started out with the idea of se-

lecting a variety that would not have any trace of the bitter flavor swede turnips often have. After several years I secured a variety that was entirely free from this nipping flavor. I earned the commendation of a large number of customers, and was highly pleased with the result. The next season I grew a larger quantity of turnips, using the same variety, procured from the same source. The result was a very nice crop of turnips which I had no hesitation in recommending. We had not sold very many, however, before we had complaints of bitterness. I had some cooked and, though I am always prejudiced in favor of my own produce, I was forced to admit that they were decidedly bitter, though perhaps not quite so bitter as the language used by some customers in describing them. I had to keep them off the market, and, somewhat discouraged, dropped the experiment.

The purple top varieties are the best; green tops are not desirable. Canadian Gem is a very excellent turnip, very uniform in shape and size, and without very much top. Jumbo is a good heavy cropping variety, a little too large in size. It is a habit of most seedsmen to select a good variety of swede turnip and sell it under their own name; these are usually to be depended upon.

OUR FEATHERED FRIENDS

Happy is the man who knows who are his friends, and who his enemies. Some people never properly acquire this intelligence. And this is true not only of our relations to other men, but also of our relations to many others of God's creatures.

To establish, especially upon the part of young people, a proper appreciation of the common birds of the country—that is the purpose of a new 32-page bulletin written by V. W. Jackson, professor of biology, Manitoba Agricultural College.

The title of the bulletin is "Our Friends—the Birds." It is quite profusely illustrated by particularly well executed original sketches drawn directly from the museum specimens at the Agricultural College, but presenting the birds in all manner of characteristic life-like occupations.

Many rather startling statements are made and quoted as to the value of birds to agriculture. These are based, for the most part, upon the insect-eating

propensities of so many of our feathered friends. In proportion to their size, birds have much greater appetites than human beings possess. Growing a family to full development in two or three months, keeping up a high body temperature and maintaining upwards of twenty hours per day on the wing—that is a strenuous program, and it gets away with the calories pretty fast. And thus it is that many comparatively small birds eat hundreds of insects each day. Others—especially our winter birds, of which there are 43 species in Manitoba—are great weed seed-eaters, and every year they consume tons upon tons of this class of food.

Prof. Jackson's whole effort is not confined to arguing the value of the birds. He devotes attention also to the enemies of birds—cats, squirrels, snakes, crows, and the female cow-bird, which is too rascally to make a nest of her own, but deposits her eggs in the nests of other birds, for warblers, vireos and others to hatch and feed.

There are many cunning ways of birds that the average person has not yet observed, but which he might easily notice if he once became interested. The bulletin will be largely read by boys and girls—it is being placed in every school library in Manitoba, but it is also for distribution to interested adults, especially farmers. Copies may be had free on application to the Publications Branch, Manitoba Department of Agriculture, Winnipeg.

KEEN DEMAND FOR BEES IN MANITOBA

There are many more demands for colonies of bees from Manitoba enquirers than can be satisfied with the supply of purchasable colonies in sight.

This sums up the present bee situation in Manitoba, as stated by Mr. R. M. Muckle, the provincial apiarist.

Mr. Muckle estimates the present number of bee-keepers in the province at 900, and each year adds about 100 beginners to the number. Last year, through his office, enquirers were directed to sources of supply to such an extent that 147 colonies were known to be bought by beginners, and even this early in the season demands have been listed for 140 colonies, mostly in orders of one or two hives for each person.

In addition to the demand for whole colonies, there has grown up quite a

demand within the province for bees by the package. No doubt the average person will laugh at the idea of purchasing buzzing, crawling, scrambling, swarming bees by the pound, just like nails or nutmegs; but this occurs right along in the bee trade. Already a single Manitoba bee-keeper has placed his order away down south for 100 two-pound packages. These bees come from the direction of Florida, where the season has begun so much earlier than here that the bees have been at work on the flowers for some time and have bred up a lot of young field workers. These young bees are then taken from the hives and offered to the trade farther north, where the bloom is just commencing. A Manitoba bee-keeper, who buys bees by the pound, introduces at the beginning of the summer enough new bees to his swarms to make up for the steady depletion that always occurs during the winter, and so starts his colonies off strong.

But these imported bees have to come a long way northward, and the journey is rather hard on them, so only a limited number of men ever undertake the importation.

The present high prices of honey, together with the sugar scarcity, are just now helping to popularize bee-keeping, which, however, has for a few years been coming into its own anyway.

WAR-TIME GARDENS IN MANITOBA

One of the best papers read at the recent Manitoba Horticultural Convention was presented by Mr. H. C. Whellams. Mr. Whellams is one of the successful market gardeners of the Winnipeg district, being a prize-winner last fall at the International Soil Products Exhibition at Peoria, Illinois. Mr. Whellams' paper has been printed in circular form by the Manitoba Department of Agriculture, and will be given a very large circulation through the schools and by other means. Copies may be had free by writing the Publications Branch, Manitoba Department of Agriculture, Winnipeg.

Look up what we said on page 2 and 3 of our last issue under the heading "Grow Some Garden Seed in 1918." By now saving some beets, turnips, carrots and cabbages, and planting them early in the spring, seed can be grown.

VEGETABLE GROWING IN SOUTH-WESTERN MANITOBA

Paper Read at the Horticultural Convention by Mr. C. O. P. Olts, Melita, Man.

I speak from the experience I have had with a vegetable garden.

I have been farming only for the last five years. I have found the garden crop to compare favorably in yield each year with any other crop on the farm; also the garden product has been one of the most valuable assets produced on the farm. The size of my vegetable garden is one and a third acres, and I have planted the same plot each year.

I did not aim at raising vegetables for the market, but for home consumption, but the demand has each year been more than I could supply. This demand has mostly been from farmers, and the result is that I have sold more vegetables than I should have disposed of.

In my experience the garden is the most profitable piece of ground, according to its size, on the farm. In 1915, at market prices, that garden plot produced over \$900.00 worth of vegetables.

Last year two of my daughters took charge of the garden. Because of adverse climatic conditions in the early part of the season, it looked as though it would be a failure, but with great care and attention it became the pride of the farm, and still we did not have vegetables enough to supply the demand.

Last fall I prepared six acres for a vegetable garden this year.

This winter, carrots have been selling as high as 3 lbs. for 25 cents in our country town. Carrots can be raised at a reasonable profit for $\frac{3}{4}$ cent per lb. Turnips have been selling for \$1.50 per 100 lbs. Such conditions should not exist in a farming community.

With the methods that have been so thoroughly demonstrated throughout our province by the Agricultural Extension Department in canning and preserving vegetables, every farmer in the province should raise, can and preserve all the vegetables needed on his farm from one year to the other.

Our vegetable garden is the greatest attraction we have on the farm for our friends, when they come from the city or town for a visit. They are fairly amazed when they see these fresh vegetables, and compare them with the withered ones which they get in the

stores. The nice things they say about the garden are very pleasing to those who have charge of the garden, and this encourages them to improve it if possible, and that extra work adds greatly to the value of the vegetables.

This year, there will be a greater demand for vegetables than ever before in the history of our country. Vegetables, to a large extent, take the place of meat and flour, and in the food situation, we can get relief quicker through our vegetable gardens than we can by raising meat and wheat. I think it behooves every farmer not to neglect his vegetable garden this year. We have as good soil in Manitoba to raise vegetables as in any other part of the Dominion. Vegetables require attention, and if they do not get it, there will be a certain amount of disappointment. I have always managed to give the garden the attention required, as I consider it just as important as any other crop on the farm.

HOME GARDEN CAMPAIGN IN VARIOUS PARTS OF CANADA

Reprinted from the Canadian Food Bulletin

The whole Dominion is being aroused to the necessity of increasing the food supply of the country by home and vacant lot gardening. Mr. Frederick Abraham, who last year was at the head of the Montreal Vacant Lot and Home Garden Cultivation Committee, is giving his services to the Canada Food Board. It is estimated that not less than \$100,000 worth of vegetables was grown on vacant lots in Montreal last year. The Canada Food Board has written to the mayor of every municipality in Canada, as well as the executive head of all existing garden associations, urging the furtherance of this work in co-operation with local societies, the Board of Trade, the clergy, the press, horticulturists, etc. A direct appeal is being made to all firemen and policemen either to cultivate lots individually or to work on the community basis.

Staple Vegetables Preferable

It is desirable that the growth of staple vegetables, such as potatoes, beets, carrots, peas, beans, lettuce, onions and parsnips, should especially be encouraged. It is the intention of the Food Board, after this year's crop of

fresh vegetables become available, to prohibit the consumption of canned vegetables in Eastern Canada to October 15th and in Western Canada to November 1st. Last year Victoria, B.C., stood fifth in production among the cities which put new acreage under cultivation. Recently a committee on increased production held its initial meeting in Victoria and laid plans for the coming season. The chairman of the Canada Food Board wrote to the Mayor of Victoria and impressed upon him the necessity of the case. On the fertile land within the City of Victoria, a Chinese community could sustain 150,000 to 200,000 people.

At a representative meeting of citizens in Regina, a food production association was organized. An effort will be made to secure from the city a fifty-acre plot which was cultivated three years ago by the Vacant Lot Garden Association. The press is emphasizing the importance of the movement.

In East Toronto the workers have formed a committee. A public mass meeting will be held for the people of the district and a member of the government will be asked to outline definite plans of production.

Toronto Granted \$3,000

The Toronto Board of Control has made a grant of \$3,000 to the Rotary Club for vacant lot cultivation. The intention is to cultivate 1,500 lots this year and it is estimated that the vegetables grown will be worth \$60,000 or \$75,000.

In Ottawa about 550 plot holders have expressed their intention to the Vacant Lot Association of continuing last year's work. At a meeting in the Normal School, Hon. T. A. Crerar, Minister of Agriculture, and Mr. Abraham, of the Canada Food Board, gave addresses on the subject of increased production.

Some four or five hundred acres of vacant land in Belleville will be plowed up and cultivated this year and a committee has been appointed.

In Hamilton some 550 letters have been sent out by the publicity committee of the Garden Club to the owners of over a thousand vacant lots, urging upon them to do their utmost this year. Arrangements are being made to secure the necessary fertilizer.

The Workman's Board of Trade is working with the Chatham Horticultural Society to produce potatoes and other vegetables.

Belleville Horticultural Society is endeavoring to have lectures on vegetable growing in both public and high schools. The pupils in the schools of Windsor have been planning all winter, and the products of the children's plots alone should supply a large proportion of Windsor's vegetables for next winter.

St. Thomas is to have vegetable plots in the vicinity of its schools.

Montreal Plans Increase

Montreal is planning to surpass last year's record. Strong district committees and clubs are working and at the annual meeting of the Cultivation Committee it was decided that where plowing had been done last year, the individual cultivators should work the empty lots themselves this season. In cases where the lots had not been previously cultivated, plowing will be carried out under the direction of the committee and the cost would be charged against the cultivators.

Dartmouth, N.S., is making a special effort to encourage the movement. A meeting of the Canadian Club was held there to initiate a campaign.

CONTROL OF THE ONION MAGGOT

By Arthur Gibson, Entomological Branch, Ottawa

The control of the imported onion maggot (*Hylemyia antiqua*) has proved a difficult problem under field conditions. Such insecticides as hellebore, insect powder, carbolic wash, etc., which have been of more or less value in garden practice, are prohibitive for field conditions, owing to their expense and cost of application, and in seasons of great abundance of the insect it is doubtful if the results would be satisfactory. The most promising field experiments which have been recently conducted to control the onion maggot are those in which a poisoned bait spray was used to destroy the adult flies before they laid their eggs upon the plants.

During the seasons of 1916 and 1917 we have had opportunities of testing the value, near Ottawa, of the following bait spray:

Sodium arsenite	5 grams
	(say $\frac{1}{4}$ oz.)
Molasses	1 pint
Boiling water	1 gallon
The sodium arsenite was first dis-	

solved in the boiling water and the molasses then added. When the mixture had cooled, it was ready for use.

In both years we used a plot one-half acre in extent. In 1916 our work was largely interfered with, owing to rains, which fell, in several instances, soon after the applications were made. Notwithstanding, however, such adverse weather conditions, the results from the experiment were certainly of a promising nature. In 1917 the experiment was continued on the same farm, and our results were indeed most satisfactory. Applications of the poisoned bait were made on June 13th (plants about four inches high), 20th, and 27th, and July 4th and 16th—five applications in all. On this latter date the onions were about one foot high on the average, and were making such rapid growth that it was decided no further applications would be advisable. The flies were readily attracted to the bait, and on occasions, a day or two after the mixture was applied, dead flies were easily found which had fed upon it.

The mixture was applied as coarse drops from a watering can with a small rose. The half-acre plot was quickly gone over, by the operator beginning at one end and walking diagonally across the crop, continuing from one side to the other in a V-shaped manner, the strips where the liquid would fall being about 15 feet apart at the wide end.

From the half-acre plot 145 bags of good onions were harvested. The stand was certainly an excellent one, considering the season. In two other nearby plots of the same size, which were not sprayed, the work of the onion maggot was readily seen, and it was estimated that 20 per cent of the plants were infested.

These experiments were conducted on the farm of Mr. I. A. Farquharson, near Rivermead, Quebec, which is close to Ottawa. We are very grateful to Mr. Farquharson for allowing us the use of his plots, and for his kindly interest and assistance in our work. His "Balvennie Gardens" are well known to many.

The cost of controlling the onion maggot with the above mixture, under conditions prevailing in 1917, was about \$1.10 per acre. This estimate includes the cost of the ingredients, as well as a charge for the labor required to apply the five applications. In cases where areas containing several acres were to be treated, the cost per acre could, we think, be somewhat reduced.

From the work which has been done near Ottawa, the results of which correspond with similar work accomplished elsewhere, it seems to us that the commercial grower of onions, in districts where the onion maggot is a regularly occurring pest, should test out the value of the mixture under his immediate local conditions. The cost of the materials is slight, and the mixture can be applied quickly, even where a number of acres are to be treated.

One acre can be treated in less than ten minutes.—Reprinted from the *Summerland Review*.

VACANT LOT GARDENING

A Prize-Winning Poem

In furtherance of the vacant lot gardening campaign of the Ottawa Horticultural Society, Mr. W. T. Macoun, the Dominion Horticulturist, inaugurated a competition for the best poem on a vegetable garden. Out of the several praiseworthy efforts sent in first prize was awarded for the following to Miss Henrietta Wood, of Ottawa:—

MY GARDEN—1917

A Dream

Rain-softened and sun-warmed, it stretches fair,
Prepared to yield a wealth of all good things.
In neat, well-ordered rows the seedlings pierce
The rich brown mould, and seek the sunlight.
Swift fly the days, and soon with eager hands
I cull the radish, ruddy tinted globe
Of pungent crispness; and green-gold lettuce;
And that scented darling of the garden,
The spring onion.

The happy days glide on.
Behold my Vacant Lot, vacant no more.
Here grow my cabbages, dew-pearled at dawn.
There stands my corn, beplumed like knight
of old.

Look on my cauliflowers, white as snow;
Potatoes, soon to yield a khaki host
To rout the hordes of hunger; and carrots,
Beets and parsnips, and many more fair
growths

Depicted in the catalogues. All these
Adorn my garden.

Hark, the alarm sounds! The vision fades.
'Tis morn; 'tis March. Deep lies the snow
upon

The unbroken sod, hiding the couch-grass,
Snake-like roots and many a weedy foc.
A thousand million tiny enemies—
Worm, weevil, beetle, bug—in ambush lie.
To win my harvest I must surely bear
A thousand aches in my poor stooping back,
And cramps in bending limbs, and sun-
skinned nose,

And countless fleckles on my now fair arms.
O say, thou preacher of domestic thrift,
Dost think that I can conquer?

—Agricultural Gazette of Canada.

NEW POTATO BULLETIN

A new potato bulletin has just been printed at Ottawa, from the pen of W. T. Macoun, Dominion Horticulturist. It contains 100 pages, and presents a great mass of information that every potato grower would be well to have on hand. To secure a copy, write the Publications Branch, Department of Agriculture, Ottawa, Ont.

To Limit Consumption of Canned Vegetables

Draw the attention of your neighbors to this statement from the Food Control Board:—

"It is the intention of the Food Board, after this year's crop of fresh vegetables becomes available, to prohibit the consumption of canned vegetables in Eastern Canada to October 15th and in Western Canada to November 1st.

MANITOBA HORTICULTURAL AND FORESTRY ASSOCIATION

Incorporated Under Act of Manitoba Legislature

Life membership, \$10.00. Annual membership, \$1.00 per year. Special 25 cent rate to members of Affiliated Horticultural Societies at Local Points in Manitoba.

Officers for 1918:

Honorary Presidents—S. A. Bedford, Department of Agriculture, Winnipeg; J. B. Reynolds, President Manitoba Agricultural College, Winnipeg; Angus Mackay, Indian Head, Sask.

President—George Batho, 406 Maryland St., Winnipeg.

First Vice-Pres.—H. W. Watson, 205 Walnut St., Winnipeg.

Second Vice-Pres.—W. J. Boughen, Valley River, Man.

Directors—A. P. Stevenson, Morden; Norman M. Ross, Indian Head, Sask.; F. L. Skinner, Dropmore; and following all of Winnipeg: Mrs. H. M. Speechly, George Barratt, W. G. Scott, Jas. Cocks, W. J. Harrison, S. G. Simpson, Henry Downing.

Secretary-Treasurer—Prof. F. W. Brodrick, Manitoba Agricultural College, Winnipeg.

ALL ARE INVITED TO JOIN

BULLETIN ON HOTBEDS AND COLD FRAMES

A new illustrated bulletin on this topic is now on the press. This was prepared by J. A. Neilson, B.S.A., until very recently engaged as lecturer in horticulture and forestry at Manitoba Agricultural College. The subject is well covered.

Copies may be had free by writing a card to the Publications Branch, Department of Agriculture, Winnipeg.

Schoolboys of Norwich, England, have undertaken to dig gardens belonging to soldiers' wives and widows.

PLANT PREMIUM LIST

Every member of the Manitoba Horticultural and Forestry Association, old or new, whose membership for 1918 is paid up, is entitled to a free choice of ONE of the following parcels:

CLASS A

1. Red Currant (one plant)
2. Black Currant (one plant)
3. White Grape Currant (one plant)
4. Raspberry (six plants)
5. Gooseberry (one plant)
6. Peony (one plant)
7. German Iris (two plants)
8. Columbine (two plants)
9. Larkspur (two plants)
10. Perennial Lupines (two plants)
11. Perennial Gaillardia (two plants)
12. Sweet William (two plants)
13. Asparagus (six roots)
14. Rhubarb (one plant)
15. Golden Willow (25 cuttings)
16. Laurel Willow (25 cuttings)
17. Common Lilac (one plant)
18. Japanese Lilac (one plant)
19. Tartarian Honeysuckle (one plant)
20. Spirea Van Houtteii (one plant)
21. Sunbeam Raspberry (six plants)

CLASS B

Little known Species recommended for testing.

22. Ohta Raspberry (six plants)
23. St. Regis Everbearing Raspberry (six plants)
24. Dr. Saunders' Hybrid Apple, Variety Prince (one plant)
25. Rose (Rosa Spinosissima) (one plant)
26. Diploma Currant (one plant)
27. Scented Thyme (Thymus Odoratis-simus) (one plant)
28. Clematis Ligusticifolia, a climber (one plant)

All Plant Premium Orders should be mailed not later than April 1st

RETURN THIS BLANK

Prof. F. W. BRODRICK,

Secretary Manitoba Horticultural and Forestry Association,
Manitoba Agricultural College, Winnipeg.

Dear Sir—Enclosed find order for \$1.00 in payment of:

1. One year's membership to Manitoba Horticultural and Forestry Association.
2. Manitoba Horticulturist one year.
3. Plant Premium (indicate choice).

First Choice

Second Choice (in case first is exhausted)

Name

Post Office

Province

P.S.—Under the charter of the Manitoba Horticultural and Forestry Association, affiliated horticultural societies may be organized at local points. Paid-up members of such societies are admitted into full membership in the Manitoba Horticultural and Forestry Association upon payment to the latter of 25 cents per year. Special blanks for membership on this basis may be had by members of local societies on application to their local secretaries.

MANITOBA HORTICULTURIST

Devoted to the better growing of Trees, Fruits, Vegetables and Flowers in Manitoba
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No. 5

LARGE INCREASE IN MEMBERSHIP

During the past two months a great many new members have joined the Manitoba Horticultural and Forestry Association. Several of the Home Economics and Agricultural Societies, as well as the local horticultural societies, have forwarded considerable groups of memberships. The membership of the association now stands at about 600. Can you help it to increase?

SOLDIERS ARE GROWING FOOD —ARE YOU?

"Food growing is second in importance only to fighting. Such is the gist of an army order issued a year ago to the British troops in France. Much military cultivation of land has been undertaken since then.

"Every military camp in the United Kingdom, every German prisoner's camp, and every aerodrome has been brought within the area of military agricultural operations. In addition, 50,000 acres are being cultivated behind the lines in France, 7,000 acres at Salonika, approximately 700,000 acres in Mesopotamia, and large areas in Egypt, Palestine and Cyprus. In France the Army has its own Directorate of Agricultural Production working for the cultivation of derelict land in conjunction with the French authorities."

The above, together with many details as to what the soldiers are doing in several of the war zones, is published in the Canadian Food Bulletin.

Are we, as civilians, doing our part in food production?

FIELD MEETS PLANNED FOR WINNIPEG DISTRICT

The executive, at a recent meeting, decided in favor of holding two field meets of the Manitoba Horticultural and Forestry Association this summer. It is intended that at the time of the peony bloom a visit shall be made among some of the gardens of Kildonan, and later another outing at Assiniboine Park.

Last year a similar gathering at the latter place proved not only very enjoyable, but very instructive as well.

The idea need not be confined to Winnipeg; local societies at other centres could adopt it also.

The Winnipeg Garden Show will be held from September 5 to 13. Full particulars and prize lists are available on application to Mr. R. C. Newton, Industrial Bureau, Winnipeg. Write to him for a copy.

"We are not gardening now to make money, but to eat," states Mr. F. E. Buek, Assistant Dominion Horticulturist. "Now is the

time to get on the cheering side, which is the production side," he adds.

The C.P.R. is encouraging vegetable production throughout its system this year. Green houses are being furnished and expert instructors employed. Land is being given to employees and in many cases free fertilizer is being supplied.

WHEN YOU DIG!

(From the British Ministry of Food)

Every inch of farm, garden, and allotment must do its utmost to beat the Kaiser. Dig your ground, prepare the soil, sow your seeds, tend your plants with a will for Victory and an Allied Peace. Privates "Spud," Parsnip, Onion, Carrot, Leek, Turnip, Bean, Cabbage, Marrow are wanted for Armies billions strong to take the great offensive in the Food fight. The man who uses his spade and hoe patriotically is befriending the man with the gun and bayonet. He risks his life that you may live unmolested.—Remember this when you dig!

SOURIS SOCIETY USES LOCAL NEWSPAPER SPACE

The Horticulturist has received a copy of the Souris Plaindealer containing a large display advertisement of the local horticultural society—one with plenty of “punch” in it—urging food production.

That famous saying about the benefaction of making two blades of grass grow where one grew before is given a new and timely twist, and the Souris ad. writer declares that “He who maketh two potatoes grow where one originally grew is a benefactor to his race and country.” We have a vision of many Souris lots where the “two potatoes” will be growing where none whatever grew before.

The whole advertisement is a work of art in its appeal to the average citizen. Here's a chunk or two of it:

“There is not a daylight hour to be wasted this year for any man in Canada with warm blood in his veins. Our boys over there are up to the knees in Flanders' mud, besides blood and bullets, gas and other inconveniences. They are keeping their end up, and we must keep our end up here by producing all the food possible.

“Men, munitions, ships and food are the potentialities that will win the war. You can actually and materially assist in one of these; put your shoulder to Canada's wagon and push. Plant a garden as a war measure if for no other reason. Get into the garden with overalls on; sow and hoe; its great; it beats joy riding or tennis into a cocked hat. The sun is shining and it's going to rain all you want this year. Have all the family doing something in the garden every day. Every square foot of vacant ground in town should be producing some food. One man with an average of one hour per day for 26 weeks, April to September, on one town lot will grow all the vegetables a family of five require for the year and need not spend one dollar on canned vegetables, he will have lettuce from May to fall and ripe tomatoes every day from August to Christmas and pickles galore and potatoes for summer use.

“Ladies, won't you push the gardening idea? Plant a patch yourself. The Horticultural Society are giving two ladies' war costumes for prizes this year for the best garden patch planted and cultivated exclusively by a woman. There will be two age classes. Girls, mark off a patch of the garden and call it your own; put on a pair of overalls for an hour or two in the evening and you'll feel better for licking the Kaiser just that much, and

you get the nice green peas, radishes, new potatoes, corn and tomatoes.

“It is significant in peace times, more so in war times, that from 6 to 10 cars of potatoes have to be shipped into this town every year from other points for ‘cats’! There is evidently no co-ordination in our gastronomical and production activities. By all means eat potatoes, two or three times a day, but be sure and grow some and then some more. Hats off to H. M. King Potato. (*Solanum Tuberosum*).”

The Souris Society also advises the public as to how to secure the use of vacant lots.

WHAT MANITOBA COULD DO TO IMPROVE THE POTATO CROP

Paper by Prof. S. A. Bedford before the Annual Convention of Manitoba Horticultural and Forestry Association

Before we can discuss this subject intelligently we must ascertain the actual condition of the potato industry in Manitoba.

Potato growers in this province may be divided into three classes:

First, the specialist who usually lives near our large centres of population.

Second, the cottager living in the smaller towns or villages and in the suburbs of the larger centres of population.

Third, the farmer who, as a rule, aims to grow only just sufficient potatoes to supply his own household.

How successful have these different producers been in the past?

Success in this case means, first, a satisfactory yield per acre of good marketable potatoes at the minimum cost for production. We have no figures as to the yield of the cottage garden, but have no doubt that it is fairly satisfactory, for such gardens usually have the best of care. But government estimates show that the yield from the farm and the land of the specialist is very disappointing, especially when we consider that as a province we perhaps have the richest soil in the Dominion. The 1916 report of the Provincial Department of Agriculture estimates the yield for the past ten years to be only 161 bushels per acre. This is far below the possibilities of our excellent soil and climate. The best authorities state that from 400 to 450 bushels per acre are commonly grown where the recognized conditions for success are applied to the soil, the seed and the

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Editor.—George Batho, 406 Maryland Street, Winnipeg.

growing crop. Personally I have grown as much as 600 bushels per acre on areas of one and two acres, and much larger quantities on small experimental plots.

We find that too large a proportion of the potatoes offered on our market are poor in quality, being either wet or soggy, scabby or with red streaks.

There is also much mixture of varieties offered, white and red skins, early and late varieties are mixed. These do not ripen at the same time and fail to cook evenly, and therefore meet with disfavor from the housewife.

Altogether too many varieties are grown in the province, making it difficult to get a straight carload of any one kind. This reduces the market value and makes trouble for the buyer.

Selection of Seed

Use a good variety, and have the tubers well preserved. They should have been kept cool and have been held in small containers. Do not use potatoes from the bottom of a pile, where they may be heated or diseased. Misshapen or scabby tubers should not be used; they should be medium in size, typical of the variety, and preferably selected at digging time from prolific hills.

Cut into fairly large sets, two or three eyes to the set, splitting the tubers lengthwise. A community should unite to grow only a very few standard varieties.

Choice of and Preparation of Soil

Rich sandy loam is best. It must be friable to allow of aeration, and be well drained; if otherwise, it will be cold and sour.

Plow as early in the fall as possible, putting the plow in as deeply as possible without bringing up too much subsoil. If the soil is a sandy loam, harrow and pack it in the fall. If it is a clay loam, leave it rough to pulverize by the elements. In the spring harrow or cultivate your land as often as you can get a crop of weeds to grow.

About May 20th roll to make the

ground level and solid. Then plow 3 to 3½ inches deep with furrows one foot wide. Drop the sets one foot apart in the rows.

Subsequent Cultivation

Harrow every few days to kill weeds until the sprouts are six inches high. Then cultivate between the rows every week and hoe between the plants. At the appearance of blossoms hill the potatoes a little.

Dig in good time before the weather becomes too cold, and while the soil is dry, if possible by October 1st.

STONEWALL HORTICULTURAL SOCIETY BOOSTING FOR FOOD PRODUCTION

The Stonewall Society is right "on the job" in the matter of increased food production. The Horticulturist has received a tersely phrased circular letter that some time ago was circulated throughout the district announcing a meeting to "arrange for the biggest show yet" (to quote the announcement), and to "give an extra boost in favor of bigger and better gardens". Let us quote:

"The little home gardens of the U.S.A. produced \$350,000,000 worth of food last year. Those of Canada produced millions also. 'Bah!' says the insufferable few, 'couldn't give away what we produced last year. No money in gardening'."

"Think of men staking their lives, and others talking of 'making money' out of a back garden these days. It's a case of root hog or die. Every dollar's worth of food eaten from your own garden is helping to save the day. The authorities at Ottawa have communicated with Stonewall Horticultural Society for the purpose of increasing interest in gardens. Get busy and grow something, especially vegetables, but don't forget the flowers. Flowers never were in greater demand in their mission of giving pleasure to those suffering bodily pain and mental anguish."

To help introduce the committee of Stonewallians (or whatever they call themselves) we line them up as follows: E. Robinson, President; H. O. May, Secretary; Rev. R. E. McCullagh, Rev. J. H. Burrow, Rev. J. Anderson, Rev. E. Mason, Mesdames Jas. Walton, Jos. Smith, Jas. Seed, Miss B. Stratton.

"The food crisis is grave and urgent beyond the possibility of exaggeration."

—Sir Robert Borden.

WINNIPEG'S INTEREST IN VACANT LOT AND BACKYARD GARDENING

By George Champion, Parks Superintendent, Winnipeg

Our interest in this subject appears to be threefold. The financial interest to be served by the value of the product of the vacant lots and backyard gardens. The recreational interest to be gained by our labor in lots and gardens, and the aesthetic interest, to be satisfied by the conversion of untidy and barren backyards and vacant lots into orderly, clean and pleasing objects of vision.

The Financial Interest

The approximate total area of the city of Winnipeg, exclusive of streets and lanes, is 9,900 acres, split up into 88,921 lots. Of these lots 55,769 are vacant, and their total approximate area is no less than 5,800 acres. This area, sown with wheat and with a yield of only 15 bushels per acre, would produce 87,000 bushels of wheat, at present prices worth approximately \$183,000. The same area cropped with potatoes, and yielding only 70 bushels per acre, would give us 406,000 bushels, or more than two bushels per head for every man, woman and child in the city. Cropped with an ordinary variety of vegetables, and estimating the value of the produce at only \$20.00 per acre, \$116,000 in direct saving would accrue as a result of that crop.

We must not forget the uncultivated backyard, of which we have only too many. There are 33,313 buildings in Winnipeg, and we can safely estimate that 15,000 of these buildings have around them more or less land available for cultivation. Less than one-third of these backyards are cultivated, and so, if we estimate that each of these 10,000 uncultivated yards could be made to produce even \$3.00 worth of vegetables in a season, we have another direct saving of \$30,000.

The average citizen is apt to look upon vegetable gardening in yards or on lots as a sort of harmless and more or less useless fad, but a little serious consideration will soon prove that the monetary value of crops raised in this way is a very real and tangible asset, apart from the beneficial results to the general health of the community, by the consumption of absolutely fresh salads and vegetables, and which, in itself, effects a very considerable financial gain or saving in lessening the usual annual expenditure on drugs and physicians.

The United States Department of Agriculture, after a very careful and

exhaustive survey, estimated the value of the products of the backyard gardens of the United States during 1917 at \$350,000,000.

These figures are stupendous and almost unbelievable, but their accuracy is undoubted, and they go to show what the humble backyard garden can do in the production of foodstuffs.

Last year, good work was done in a campaign for increased production in our city, and as a result many additional gardens, and a large number of vacant lots were cultivated and cropped. But after all, only a very small part of the land available was used, and this year we want every man, woman and child to help in this work, every one to determine that he or she will produce, or help to produce, some articles of food by manual labor on the land.

Winnipeg's financial interest will be served very materially, and even if we do not reach the goal of possible production as outlined above, for not only can we make a direct saving by producing foodstuffs instead of purchasing them, but we add to the country's, and indirectly to the city's, wealth by the value of the corresponding bulk of foodstuffs released for export sale.

Recreational Interest

The occupations followed by the great majority of the people of our city are what are usually termed by a farmer, "inside jobs." Financial houses, grain exchange, factories, wholesale and retail business houses all chain their staffs to inside work for a greater or lesser number of hours per day all the year round. Most people congratulate themselves upon holding down one of the "inside jobs" when the thermometer is hovering around the zero mark, yet, each recurring spring, with its lengthening days and strengthening sunshine, brings to every normal person a desire for recreation, for contact with nature in the great out of doors. This desire is usually gratified by participation in outdoor games and a variety of other ways, but not always as our inclinations direct, for in this, as in many other of life's matters, we are largely governed by our means and opportunities.

Deep down in all our beings is an instinctive desire to garden, to grow something, to dig the soil, to assist nature in her annual recreative work, and though in many a Winnipegger's being the instinct is implanted so very deeply that it is almost impossible to either dig it up or induce it to show any signs of life, yet there are many others whom a little

enthusiasm and good advice will convert into active workers.

The recreative value of gardening can never be over-estimated. To the beginner, who is wrestling with, perhaps the weeds and rubbish of years of backyard neglect, the tough sods of a newly broken lot or perhaps the irregular heaps of clay with which some kind contractor has ornamented a vacant lot, gardening may seem to be only another name for real hard work, but even this phase of aching muscles and sweating brow carries with it a pleasurable feeling of personal accomplishment and rejuvenation of the spirits whilst the physical value of the exercise to the enervated frame and flabby muscles of the average person of the "inside job" is immense and unquestionable. To those who are not beginners, there is, perhaps, less of hard work but still sufficient to ensure ample exercise of many unused muscles, and healthy lung expansion in the open air.

Recreation is a necessity, even in these strenuous days, when many people are abstaining from participation in their usual games and pastimes, because of the serious effect upon their minds of the world crisis through which we are passing. It is our duty to see to it that the strength and stamina of the nation is maintained to help offset the drain upon our young manhood by the war, and proper recreation for all is one of the most important methods of insuring that national physical well being.

There is ample time for both games and gardening in our long summer days, but for those people who do not indulge in either, gardening can be recommended as a perfect recreation. Sufficient bodily exercise in the open air, an ever increasing mental stimulant as the season lengthens and interest in the growing crops becomes more absorbing, and finally the pleasure of winning out, or, in other words, harvesting the results of the game. And it is the only game in which each and every participant can have the pleasure of winning out.

Aesthetic Interest

We believe in civic beauty. We expend a certain amount of effort in obtaining civic beauty in some ways and in some sections. More particularly is this effort expressed in our tree lined streets, our parks, our public and private buildings, and in the many homes and home grounds of the city. Civic beauty is not a fad, but a tangible civic asset. It returns a thousandfold its cost, in the value of its elevating and refining influences, par-

ticularly upon the younger generation, for we are, after all, the product of our environment. That civic beauty pays has become so generally accepted a fact that I have emphasized it only to help impress upon you the interest that Winnipeg has in the aesthetic aspect of the question of vacant lot and backyard cultivation.

As mentioned before there are approximately 5,800 acres of vacant lots inside the city limits, of which only about 150 acres were cultivated last year, leaving nearly 5,700 acres of waste and unproductive land. If we add to this the approximate area of uncultivated back and front yards, we have more than 6,000 acres of land scattered in varying sizes throughout the city, growing noxious and other weeds, receptacles for waste paper and odds and ends of all descriptions.

Had all this vacant land been left undisturbed, clothed in the garb which nature provides, it would have possessed claims to beauty, cleanliness, and, from the children's viewpoint, a certain amount of utility.

But the sod cutting man, the builder, the sewer contractor, and even the civic departmental workmen have left their trail over thousands of these vacant lots, and have converted them from sweet clean grass covered plots, to humpy, weedy, rubbishy vacant lots, usually ornamented with a variety of signs in varying stages of decrepitude, the whole thing an abomination and offence to our utilitarian and artistic senses. If we could cover these unsightly areas with clean productive garden plots, even only those areas in and around the built up portions of the city, what a wonderful transformation would be effected. And if to this we could add only 50 per cent of those neglected and untidy front and backyards, and add them in a new garb of orderly usefulness, we might then with some degree of reason claim to be dwellers in a city beautiful.

Importance of Increased Production

I have endeavored to show briefly from three different angles "Winnipeg's interest" or "Winnipeg people's interest" in vacant lot and backyard gardening.

There is still another angle from which to view this subject, and that is "Winnipeg people's duty" in relation to increased production. We talk a great deal about the sacrifices, the inconvenience, the dislocation of business and affairs generally caused by the war, but, after all, how many in Winnipeg, apart from those heroic souls who have given their loved

ones to their country, have made any real personal sacrifices or expended any real personal efforts in helping in any way in the great world war.

Contributions to funds of all kinds have been prompt and generous, but the increased business and flow of money incidental to, and as a direct result of, the world war has made it comparatively easy to make these contributions. We have subscribed liberally to war loans and victory bonds, but that is a good investment, and not a sacrifice. To quote those who come back from shot-torn France, ravished Belgium, and straining, bleeding England, "You do not know there is a war." And that is only too true. At this distance from the actual conflict we have few opportunities for personal service. We cannot all go overseas, we cannot all find some big thing to do at home, but we can recognize and acknowledge that we should each do **something**, that if we cannot do big things we can do the smaller things, that the spectre of a world's shortage of foodstuffs is a very real and menacing spectre, and that every pound, yes, every ounce of produce grown on the vacant lots and gardens of our city will help to offset that shortage.

Every effort expended in increased production is an effort towards winning the war, and Winnipeg's interest in this is the interest of the nation, the Empire and the Allies, in the triumph of truth, freedom and democracy against the forces of the apostles of deceit, murder, rapine, and brutal autocratic might.

SPROUTING POTATOES IN THE SUNLIGHT

By Mrs. J. B. H., Foxwarren, Man.

In the February number of The Manitoba Horticulturist, N. O. Werner, North Dakota Agricultural College, gives directions for sprouting potatoes by placing in full light, and I would like to add a caution to those who follow them, viz., to be sure to place the potatoes in an empty flat or shallow box. We have followed this plan for over thirty years, and I found, when telling any one about it, that, unless warned to the contrary, they invariably placed some soil in the boxes, with the result that the potatoes grew roots as well as tops, and could not be pulled apart at planting time without damage.

Last season I tried planting potato parings, and found them quite a success. I counted and weighed the crop, but unfortunately lost my notes. I would

advise anyone trying this to cut the pieces to one eye only, leaving as much of the paring as possible to the piece, and to plant several pieces in each hill. Of course, when potatoes are cheap and plentiful, it does not seem worth while adopting this plan, but in times of scarcity a small garden can be planted in this way at no expense. A hill could be done each day with the fresh parings.

IS THE FRAGRANT MUSK EXTINCT?

From Dr. Speechly, former president of the Manitoba Horticultural and Forestry Association, now residing in England, we have a copy of The Garden, an English horticultural journal in which appears an article entitled, "An Old-Time Fragrant Musk Once More."

The article sets forth that for several years fragrant musk had been unknown—or publicly unknown—to the horticultural world. The editor was overjoyed at rediscovering a fragrant musk plant.

Dr. Speechly, in a side note, says "I fancy I have come across fragrant musk in some window plants in Manitoba."

Perhaps some reader can throw some light on this question.

A GOOD WORD FOR THE POTATO

The following clipping is taken from the Souris Plaindealer as a contribution of the Souris and Glenwood Horticultural Society:—

"The 'humble tuber,' the common murphy or potato, is very apt to be dismissed from our mind as commonplace, but on second thought, it looms up to very great importance. The potato is the most staple food, and next to wheat is the most important source of starch in the human diet. It has proved to be a successful substitute for wheat food stuffs. Everybody likes potatoes and eats them; the habit is already formed. They are prepared for the table in a variety of ways. The potato is ready for the kitchen as soon as it comes from the ground without having to go through any milling process or other costly machine preparation. It will keep in an ordinary cellar till potatoes come again without the special help of the kind-hearted cold storage people. Grow lots of potatoes and shake hands with yourself—Mr. Consumer meet Mr. Producer. The potato is the only food that can in any considerable degree replace grain; so if you grow and eat more potatoes a corresponding larger quantity of

GERMANY'S WAR GARDENS SAVED FOOD SITUATION

Dr. Alonzo E. Taylor, of the United States Food Administration, in a recent address said: "It is no exaggeration to say that the war gardens in Europe have, in the case of Germany, for instance, pulled her through two summers, and that she would probably not have been able to pull through if it had not been for her war gardens. In the largest cities of Germany, as much as 25 per cent or 30 per cent of the food consumption of those people during those months was fresh vegetables, relieving largely the cereal situation."

grain can be released to be shipped overseas.

"The yield per acre is more than twice that of wheat when reduced to the same food value and with fewer risks as a crop. Potatoes can be grown by anybody, everybody, anywhere on any kind of soil, on any piece of ground, whether fenced or not, with a considerable degree of success. The planting, cultivating, harvesting and storing can all be done with the most simple hand tools.

"Manifestly any crop that can serve as a substitute for grain is of high value. When such a crop is at the same time a good food its value is still further enhanced; when it is a good food that everybody likes, its value mounts high; and when it is one that everybody can raise in his own backyard or on a vacant lot and without special machinery, its significance is beyond estimate, especially under present conditions. Such a crop is the potato, and aside from wheat no other that can be grown in this climate can compare with it when every significant point is taken into consideration. Plant every potato you can from May 10 to June 1, and help win the war."

FOOD PRODUCTION—WHAT IS YOUR SOCIETY DOING?

In this issue we give a little information about what the Souris and Stonewall Horticultural Societies are doing to increase food production. Will some of the other Horticultural and Home Economics Societies kindly write and tell us what their organizations are doing along similar lines.

BOYS AND GIRLS ARE GARDENING

About 9,500 members of the Manitoba Boys' and Girls' Clubs are entering for the gardening and canning contests this year. This promises well for production.

ADVICE TO BEE-KEEPERS

Mr. F. W. L. Sladen, Dominion Apiarist, says: "I am more than ever convinced that for a large output of honey this coming summer, one of the best bits of advice to give is to urge those who are employing and know how to employ modern methods to increase their holdings by purchasing or leasing bees from those who, for one reason or another, are neglecting their bees. The transaction should be accomplished within the next few weeks."

GARDEN LITERATURE IN DEMAND

About forty thousand copies of the circular, "War-Time Gardens in Mani-

MANITOBA HORTICULTURAL AND FORESTRY ASSOCIATION

Incorporated Under Act of Manitoba Legislature

Life membership, \$10.00. Annual membership, \$1.00 per year. Special 25 cent rate to members of Affiliated Horticultural Societies at Local Points in Manitoba.

Officers for 1917:

Honorary Presidents—S. A. Bedford, Department of Agriculture, Winnipeg; President J. B. Reynolds, Manitoba Agricultural College, Winnipeg; Angus Mackay, Indian Head, Sask.

President—George Batho, 406 Maryland St., Winnipeg.

First Vice-Pres.—H. W. Watson, 205 Walnut St., Winnipeg.

Second Vice-Pres. W. J. Boughen, Valley River, Man.

Directors—A. P. Stevenson, Morden; Norman M. Ross, Indian Head, Sask.; F. L. Skinner, Dropmore; and following all of Winnipeg, Mrs. H. M. Speechly, George Barratt, W. G. Scott, Jas. Cocks, S. G. Simpson, W. J. Harrison, Henry Downing.

Secretary-Treasurer—Prof. F. W. Brodrick, Manitoba Agricultural College, Winnipeg.

ALL ARE INVITED TO JOIN

toba," have been distributed this spring by the Manitoba Department of Agriculture. A few hundred copies still remain, and any horticultural society that could use these to distribute to the public should apply to the Publications Branch, Dept. of Agriculture, Winnipeg.

GROW BEANS

Plant a lot of garden beans this year. Use all you can while they are green. Can a lot. Put some of the green pods down in plenty of salt in crocks. Let a large number of rows ripen and gather and shell them for winter use.

DON'T WASTE FOOD

The Order-in-Council against waste, making it an offence subject to heavy penalties, would apply if food were wasted in any of the following ways:

1. If food fit for human use is wilfully or negligently damaged or thrown away.

This applies to proprietors of hotels, clubs, restaurants, cafes, steamships, dining cars, etc., managers of institutions, church societies or lodges, private householders or other persons who destroy or discard good food; also to wasteful picnic parties or travellers; also to hunters, fishermen, etc., who neglect to save game or fish secured by them.

2. If the person having control of food omits to take any precaution which should reasonably be taken for its preservation.

This applies to persons anywhere who allow food to spoil, if it could be saved by cooking, canning or other treatment; also to careless and wasteful cooks; also to farmers, gardeners or other producers who neglect to protect grain, produce or other food against deterioration or loss; also to merchants who allow candy, fruit or other food to spoil by exposure in windows, or open to flies, dust, moisture, etc.; also to persons who, through careless storage, leave food accessible to rats, mice, or other vermin; also to handlers who cause waste by careless packing or shipping; also to public or private carriers, who are negligent and cause waste or deterioration.

3. If any one procures for any purpose a greater quantity than is reasonably required and any part becomes unfit for human food.

This applies to dealers and others, including private householders who board food, if any part of it spoils because of inadequate storage facilities or for any other reason; also to persons who, through careless buying, purchase more for current consumption than they require.

4. If the person who has the disposal of food unreasonably retains it until it goes bad.

This applies to producers, dealers or private individuals who fail to market or otherwise dispose of food in excess of their own requirements in time to prevent waste; also to those who refuse to sell at a loss, if current prices require, in order to avoid food waste.

The penalties are a fine of not less than \$100 or more than \$1,000, or imprisonment for up to 3 months, or both fine and imprisonment. In the case of dealers, waste may also result in cancellation of the Canada Food Board License.

It is the duty of each municipality in Canada to enforce the regulations against waste within its municipal limits, and when a fine is imposed as a result of proceedings instituted by a Provincial or Municipal officer, such fine shall be paid into the Provincial or Municipal Treasury. IT IS UP TO EVERY INDIVIDUAL CITIZEN TO SEE THAT THE REGULATIONS ARE ENFORCED.

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Nos. 6 & 7

TO IMPROVE THE MANITOBA HORTICULTURIST

THE mission of The Manitoba Horticulturist, and its success in fulfilling such, is no longer an experiment. Hundreds of members of the Manitoba Horticultural and Forestry Association look forward with eagerness to its visits, and to its timely and valuable advice upon all horticultural subjects.

With a view to assisting the editor in making the publication still more beneficial, the Directors, at a meeting held recently, appointed what may be termed a Publication Committee. It will be the object of this committee to obtain from the most successful professional and amateur horticulturists short articles upon subjects that will be especially timely and seasonal. For instance, the articles in each month's publication will, as far as possible, anticipate the difficulties the grower may experience during the following month, and offer such advice as may seem most valuable.

Hundreds of our members wish to know of the successes of others upon all horticultural lines, the difficulties met and how these were overcome. They wish to have this information presented to them but a short time before the necessity arises for making use of it.

The committee realizes that it must depend upon the co-operation of all the members of the Association to obtain these timely articles. It hopes to make the August issue of special value to societies that intend holding an exhibition, and asks for short articles for publication from members who have had experience along such lines as:—

1. How the Directors may secure a large list of exhibitors.
2. How to prepare during the month preceding the exhibition, the specimens of plants or samples of flowers or vegetables intended for show purposes.
3. How to prepare the show material, e.g., cut flowers, pot plants or vegetables, prior to placing it upon exhibition.
4. How to arrange the various sections in the hall, so as to present the best appearance to the public.
5. How to arrange the various specimens in an individual vegetable display so as to produce the most artistic effect.

Will those who have information upon any of these topics kindly send such in a brief article to the editor, Mr. Geo. Batho, 406 Maryland St., Winnipeg.

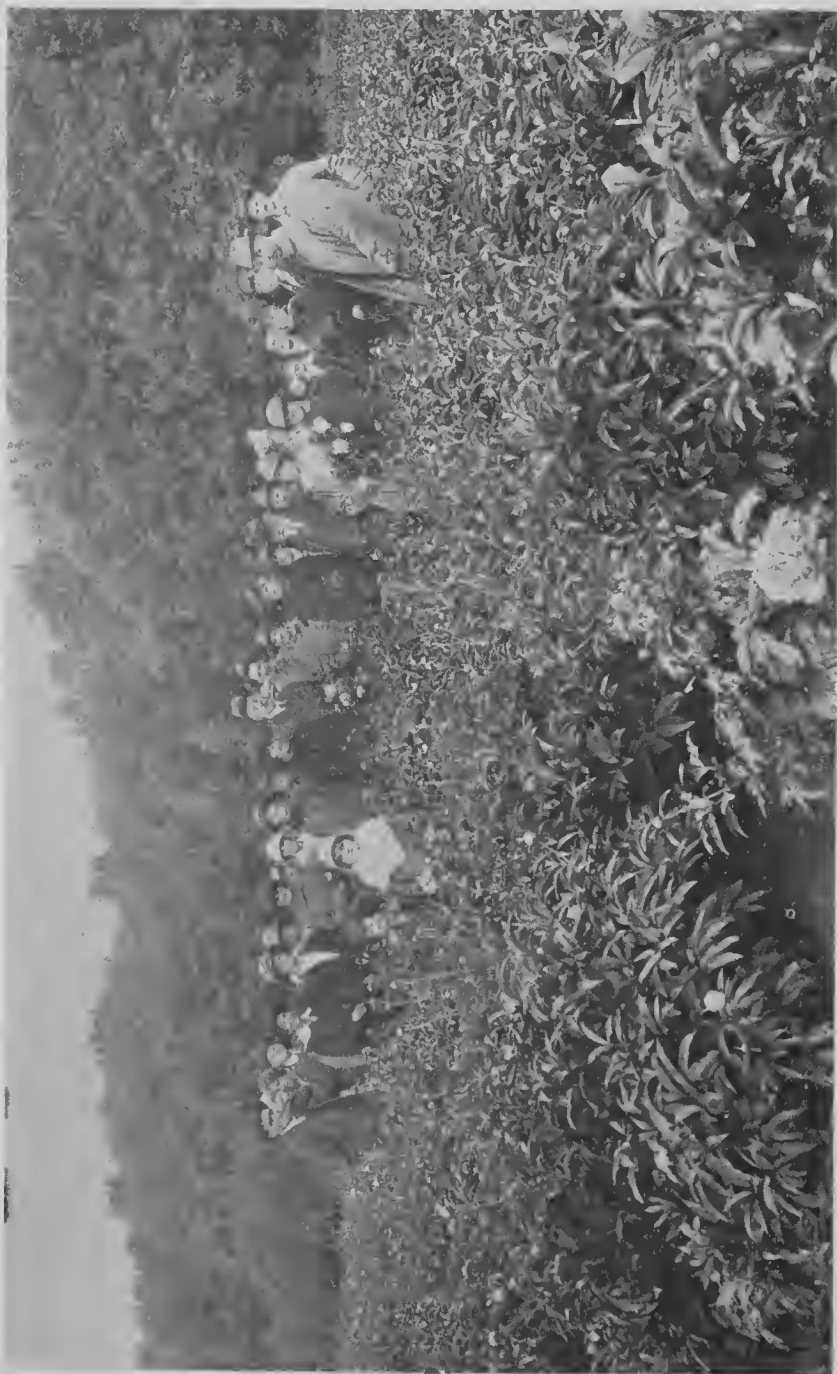
To the Secretaries of Local Societies

Will you kindly lend your assistance by forwarding to the editor the following information:—

1. The names of the officers of your Society.
2. The names of your members who are successful in any particular line of horticulture, and who may be induced to contribute short articles regarding such.
3. A short statement of the work of your Society this season, and what steps you are taking towards holding an exhibition this fall.

H. W. WATSON, Vice-President,
Manitoba Horticultural and Forestry Association.

205 Walnut St., Winnipeg.



Some of the horticultural enthusiasts who attended the field meet at the home of Mr. W. G. Scott, East St. Paul, about six miles north of Winnipeg. The picture shows about one-quarter of the crowd. The plants are peonies. Thousands of peony plants are grown, as well as several acres devoted to other perennials and ornamentals.

Manitoba Horticulturist

406 Maryland St., Winnipeg.

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Editor.—George Batho, 406 Maryland, Street, Winnipeg.

FIELD MEET WITH MANITOBA'S PEONY KING

A drizzling rainfall somewhat cut short a very pleasant and otherwise successful outing which was held at the home of Mr. W. G. Scott, East St. Paul, on Saturday afternoon, June 29th, by the members of the Manitoba Horticultural and Forestry Association.

The occasion was an open air gathering of the Association to do honor to an honorary member of the Association, and to examine the splendid collection of peonies on Mr. Scott's grounds.

Mr. Scott has made a careful study of peony growing, and had many beautiful forms in full bloom at the time of this visit. He has been very successful in his culture of this beautiful flower, as evidenced by the general vigor of the plants and the abundance of bloom throughout his entire collection. Up to the time of this visit, though the peony season had only begun, he had taken off over three thousand blooms, which are being held in cold storage, and which will be disposed of later as the market demands.

In all, Mr. Scott has 120 named sorts, as well as a great number of other choice varieties of which the names have been lost. The shades grade up from such beautiful blooms as the choice Festiva Maxima, with its single drop of blood in a great ball of pure white, to Monsieur Martin Cahuzac, the darkest peony grown, whose sombre petals are almost suggestive of red blackness.

Those who had an opportunity of attending this outing felt deeply indebted to Mr. Scott for the generous way in which he supplied blooms to many of the visitors, and for the opportunity which was given of seeing his beautiful collection.

CANNING BEANS AND PEAS IN BRINE

Mr. Henry Downing, a Director of this Association, passes on the following recipes, which he has tried with perfect success. The plan is a combination of the salt and sterilizing methods, and is much easier to follow than the customary method of long boiling. Here are the recipes:

To Can Beans—Allow a cupful of salt to a quart sealer. Beans must be young. String and cut up very fine. Boil beans for five minutes. Have bottles hot and air-tight. Put in alternate layers of beans and salt. Shake down, but do not press. When bottle is filled, run over with some of the boiling water and screw down. Stand the sealers upside down until cool.

Peas—Peas can be done in the same way as beans. Shell peas first. Use a strainer to lift out beans or peas so as not to put in too much water until bottle is filled.

To Use.—When wanted for use, turn into a bowl, let stand all day or over night in fresh water. Cook beans for an hour or until soft in fresh boiled water. Cook peas about twenty minutes.

POTATO GROWING AT PORTAGE LA PRAIRIE

By H. Stephens, Portage la Prairie, Man.

We plant anywhere from fifty to sixty-five acres of potatoes. Last year's acreage reached the sixty-five mark, and this year's fifty-one.

The land used is that which requires to be summerfallowed. Usually it is skimmed in the fall and then dressed with about ten loads to the acre of barnyard manure. The following spring it is plowed to a depth of about six inches, harrowed, and finally rolled with a light land-packer.

The seed we are using is what is known in this district as the Early Delaware, which seems to be the most suitable for the locality. This is a white, smooth potato, which cannot be equalled for table use. It ripens about the latter part of September, and is a good "keeper."

When preparing for seeding, we take out with a potato-sorter about five per cent, which are objectionably undersized, and the balance is used for seed. These are first treated with formaldehyde to prevent scab, and are then hand-cut, leaving a good portion of potato to each eye and splitting the potato in the end where the eyes are thick. As soon as cut,

they are sprinkled with land plaster, which protects the seed from drying, and permits of the seed being kept a week or ten days before planting, if to do so is found more convenient.

The seed is planted in rows about thirty-three inches apart, with the planter set to drop the pieces at about every ten inches in the row.

The cultivation through the season is an important consideration. If the ground is weedy, harrowing is commenced shortly after the potatoes are planted, and the process is repeated possibly twice or three times a week if necessary until the potatoes are three or four inches high. The cultivator is then used between the rows until the foliage commences to cover the ground. At about this stage, if there are potato bugs in the district, they will begin to show themselves. These are destroyed with arsenate of lead or paris green, put on by means of a two-horse sprayer.

The machinery used in connection with the potatoes is as follows: A two-horse potato planter, two-horse potato cultivator, a fifty-gallon capacity sprayer, which sprays four rows at a time and is drawn by two horses, and potato diggers, which are four-horse machines.

At time of digging the potatoes are sorted, and any portion of the crop which is not sold before cold weather sets in is allowed to remain in a root-house. This is almost entirely underground.

The crops are marketed over a wide area. During the last two years, a portion has been shipped to Ontario, and the balance to points in Manitoba and Saskatchewan.

GARDENING IN FAR NORTHERN MANITOBA

Take your map of Manitoba and look at the location of Norway House. Of course, the country is not very minutely surveyed up there, north of the northern end of Lake Winnipeg, but if it were you would find Norway House in or close to township 57, range 3 west of the principal meridian. In other words, it is 282 miles almost due north of Winnipeg.

The country about Norway House is not much addicted to agriculture, but still, in its small way, it is feeling and responding to the throb for greater production.

Rev. J. F. J. Marshall, missionary in charge at Jack River school, Norway House, in a recent report to the Manitoba Dept. of Agriculture, says: "This is not a farming district. The people raise pota-

atoes and a few cattle. The gardens have been doubled in size. We use marsh hay for cattle. Fishing is the chief work in summer and trapping in winter."

To show what "doubling in size" means, we may note that Mr. Marshall reports upon the individual potato crops of five men there. One has planted half an acre of potatoes, three have one acre each, and three have two acres each. In addition, there is a small acreage into roots and other garden crops.

MR. ABRAHAM VISITS WINNIPEG

Mr. F. Abraham is Honorary Chairman of the Vacant Lot and Home Garden Section of the Canada Food Board.

At present he is on a trip through Western Canada. On June 17th, in company with Mr. Stewart, Chairman of the Conservation and Publicity Section of the same Board, Mr. Abraham visited Winnipeg, and was the guest of the Garden Section of the Industrial Bureau.

Naturally, the visit was made the occasion for a few short speeches on the movement to use the vacant lots in the various cities of Canada.

Mr. C. S. Shepard, Chairman of the Garden Section of the Bureau, stated that the Street Commissioner's office had estimated that there were 21,319 gardens under cultivation in Winnipeg, about 1,700 of which were on vacant lots. Twelve firms within the city were known to have provided blocks of land and secured their cultivation so that these might be subdivided into garden plots for the use of their employees.

Mr. Abraham declared that in 1917, according to an estimate by Mr. J. B. Spencer, Canada raised upwards of thirty million dollars worth of produce in its war gardens. This amount would be almost doubled this year.

We must raise more and more food, Mr. Abraham declared. Events of more or less individual importance were rapidly occurring to restrict the food supply. The recent embargo placed on rice by Japan was one incident that was typical of many such.

The ending of the war would not end the need and call for food. Indeed, it would greatly increase and intensify it, for a considerable time, because countries whose doors to the outside world were now bolted would at once plead as they were unable to plead now for relief from starvation.

When it is remembered that the number of people who have starved to death in

Europe has been greater than the number killed in the war, the great food need is manifest.

Mr. Abraham referred to what some communities were doing in vacant lot gardening. In the city of Victoria boulevards are plowed and planted to gardens. In Windsor one gentleman offered the free use of about 500 acres. In many communities a great amount of gardening is being done by the women.

The Food Control Board is publishing a large edition of booklets on canning and dehydrating of vegetables. This edition will be offered to the public in a few days.

THE FARM VEGETABLE GARDEN

By James B. King, Fairfax, Man.

While the subject assigned me is "The Farm Garden," I am taking the liberty of limiting myself to vegetables, and will deal with the subject in a general way, rather than taking up each vegetable separately.

The farm garden is too often an unpopular part of the farm to the average farmer. There is little interest taken in it, and where interest is lacking, there is sure to be lack of attention. Take an intelligent interest in the garden, and you will be well repaid by a good supply of vegetables that will cut down your household expenses. If the eating of less pork and more vegetables does not appeal to you on the ground of health, it should appeal to you on the ground of conserving the meat supply to help win the war.

Location

The location of a garden is an important matter. It should be close to the house, so that the daily supply of vegetables can be got readily, and then, if it is near, considerable of the work can be done at odd times.

If you have the choice of exposure, a slight southeastern slope is the best for a vegetable garden. A south-eastern slope will warm up quicker in the morning and have a more even temperature during the day than a southern or south-western, but a slope to the south is preferable to a northern one, as the crop will be much earlier. Remember, we are advocating a southern slope for a vegetable garden, not for a fruit garden, for which a northern slope is decidedly the best.

To have the best success, the soil should be a free working loam of good depth and have a subsoil of clay or clayey sand. The capillary action of the soil (that is,

its power to draw up water from below) is greater as its particles are more finely divided, and the same may be said of a soil's ability to hold water. For these reasons a gravel or shale subsoil is a poor one for a garden. An ideal garden soil would be a free-working loam of good depth, with a clay subsoil, and the ground water within a dozen feet of the surface. Such a soil, with good drainage, will produce a crop almost regardless of rainfall, if given the proper cultivation. But we can seldom get the ideal, so we must take the best that offers near at hand. A comparatively small amount of land is needed for a garden on a farm, so it is well to choose a good spot if it can be found convenient to the house. It would be well for those locating buildings on a farm to consider a suitable place for both vegetable and fruit gardens in selecting the spot.

Preparation

Lack of sufficient preparation is the main reason for the poor success of most vegetable gardens on the farm. The farmer, usually after he has finished his wheat seeding—or it may be even later—takes the notion that he will have a vegetable garden; so he plows and harrows a piece of land that is handy to the house. It is often stubble or the weed grown piece he had tried the year before, and he sows the seeds, from onions to citrons, all on the same day. The result is that if the season be rainy, he has fair success with some kinds, while if it is dry—and it usually is dry weather at this time—there is not sufficient moisture to germinate the seeds, for newly plowed land dries out very quickly, especially the top two inches, which is about the limit of depth we can plant most garden seeds. Even if they do germinate, some of the seeds are planted too late for the best results; and some too early, and are frozen.

To properly prepare land for a garden, work must be started on it the year before. A garden well cultivated and kept free from weeds is the best preparation for it the next year. It is unnecessary to change the plot each year; to change the position of the different kinds of vegetables is all that is necessary. The garden on this farm has been on the same spot for thirty years, and we can see no reason for changing it. A piece of well-worked summer-fallow or any land on which a hoed crop is grown, of course, will fill the bill to start with. As is well-known, cultivation conserves soil moisture, and moisture is the great essential.

The garden is not sufficiently prepared unless it be manured, plowed and harrowed in the fall. Use only well-rotted manure without a semblance of straw in it. It may be applied either before or after plowing. In the latter case, it should be thoroughly harrowed in, so as to incorporate with the top few inches of soil. It is necessary to have the garden thus prepared, so that we can sow certain kinds of seeds early.

Some may say, what is the use of sowing certain seeds so early; the land is cold and there is little growth. That may be so, but we have more moisture to germinate the seeds than if sown a few weeks later, and we have invariably found the early sown hardy vegetables to be the better crop.

You can plow deeper in the fall than it would be advisable to do in the spring, thus bringing up some crude soil to the surface, to be oxidized by the air and disintegrated by the action of the frost. The plant food is then in a more available form; besides your soil is deepened and the roots of the plants will make freer growth. The land should be plowed a little deeper each year, until you have it as deep as it is possible to put a plow into it. A walking plow with four horses is best for this work. The coulter can be taken off and the plow run in till the muzzle scrapes on the ground. A soil's capacity for holding water is increased by deep plowing, provided it has sufficient surface cultivation to moderately firm it.

Now supposing we spring plow. If done early, you will be unable to plow deep, for the frost will not be far enough out of the land to do so, and especially if the land has been manured the previous fall or through the winter. If done later, when you could plow deep, it would not be advisable to bring up too much crude soil, and, as mentioned before, it would be too late to have the best results with certain kinds of vegetables. It will also leave the land rather loose though this could be overcome by the use of a land packer.

Seeds and Seeding

We prefer to order our seeds direct from the seedsman. You have a better choice if you pick from a catalogue than if you buy locally. Avoid "novelties" and stay with the standard kinds. If you have not a good idea of the best varieties to plant, you will find in the Experimental Farm reports, lists recommended for this purpose. It is a good idea to keep track of the names of the varieties you sow each year, and by marking the ones that

do best, in a few years you have considerable data to go by. Individual tastes differ, and no list of seeds will suit you as well as the one you have chosen by your own experience. While it is best to stick by the old tried varieties, it is wise to try some new kinds that look promising each year, and then if they prove superior, you can drop the old kind.

Sow the seeds in rows the full length of the garden. Have the rows straight and parallel with one another. They are just as easily sown in this way as in crooked rows, and the work of cultivating is much easier, particularly if done with a wheel or horse hoe. If possible, run the harrows over it just before you sow the different kinds. It will save a hoeing. See that the soil is well firmed both below and above the seeds, so as to have good germination.

Transplanting

To have the best success with certain kinds of vegetables, it is necessary that they be started in window boxes or a hot-bed. Which of these are used will depend altogether on the amount of plants needed. For a small amount the window boxes will give the least trouble, but most farmers would find it to their advantage to have a hot-bed. The work of making a hot-bed, including the sowing, can be done before seeding starts, and the after work will be no greater than looking after window boxes. Besides, growth is much more rapid in the hot-bed. The advantages in growing your own plants are that you have the varieties you want, you can have them in the best possible condition for transplanting, and you have them on the spot if there comes a good day for transplanting.

In transplanting have the plants well hardened off in the hot-bed, by withholding water and leaving the sash off, except on nights when frost is liable to occur. Water freely before pulling the plants, less of the small roots will be broken. Plant deeply and take off a few of the bottom leaves to help equalize matters, as a number of the smaller roots will be broken in pulling. See that the earth is well firmed about the roots, and leave a hollow around each plant so that they can be watered for a few days, depending on the weather. After the last watering, draw a little loose earth in around each plant to prevent baking and cracking. Dull weather is the best time to transplant. By using these methods we have had good success without shading the plants.

Cultivation

In cultivating our garden we use a horse hoe, hand wheel hoe, and a common hoe. The horse hoe is used first, running it around the ends and sides and wherever the rows are wide enough apart to get it through; then the hand wheel hoe is used between the rows of the smaller vegetables, and we finish up with the common hoe, taking a row at a time and knocking out any weeds that may have been missed. By leaving the hand hoeing off for a day, the weeds that are missed are easier seen, as the others will have wilted down by that time. These hoeings should be at least sufficient to keep the land free from weeds, and should preferably be done as soon as the ground will work freely after a rain. It is almost impossible for a farmer to do hoeing in a garden after harvest starts, but if kept clean up till then, there will be very little weed growth after that.

The three essentials of a garden are:

1. Proper preparation of the land;
2. Sowing the proper seeds at the right time; and—
3. Sufficient cultivation to keep down weeds and conserve soil moisture.

While it is true that the most of us will have little leisure this coming summer for gardening, still we must do our utmost to produce and use garden produce and so leave more of our grains and meats available for export.

Remember that work to be the most effective, must be done in the best place, in the proper manner, and at the right time, and nowhere is this truer than in gardening. And there is no place where you can get a better return for your work in wholesome, healthful food than in the farm garden.

POTATO DISEASES

Paper read at last winter's Potato Conference by Prof. V. W. Jackson, Biologist and Botanist, Manitoba Agricultural College.

We are now finding that many potato diseases have no causal organism, rather simply physiological weaknesses due to soil deficiency or unknown causes.

Leaf Roll

Leaf Roll, Leaf Mosaic and Curly Dwarf are of this nature, and leaf roll often takes one-half to one-third of the crop; but more often it is not so serious, and, in Manitoba, perhaps never exceeds eight per cent of the crop. But our average yield is going down each year, no

doubt largely due to physiological causes rather than to specific diseases, which, being more conspicuous and better understood, are better combated.

Surveys Needed

It is of the utmost importance that surveys be made and statistics collected showing the extent to which our crop is affected by these physiological diseases, which usually escape mention in bulletins, as they are little understood and no specific treatment known for them. The early settlers had larger yields and more satisfaction with their potatoes than we have, and no doubt this is due mainly to the increase in physiological diseases of the potato.

Leaf Mosaic

Leaf Mosaic, which does such harm in tobacco plantations, does not seem to be very common in Manitoba potatoes, nor, as yet, to affect their yield. It is recognized, on holding the leaf to the light, by the pale blotches or spots in parts of the leaf which gradually become soft, whereas leaf roll and curly dwarf cause a drying and shrivelling of the leaf.

Curly Dwarf

Curly Dwarf, when at all prevalent, makes the yield unmarketable. Although these physiological diseases are little understood, it is known that they are all communicable and hereditary, and therefore the importance of good seed is a vital factor in potato production.

Northern Grown Seed

In Ontario and the Eastern States they now admit that the once unnoticed leaf roll has become the worst potato disease. So far selection has proved futile in getting immunity. New stock or new varieties, grown in new situations, seems to be the greatest hope. Old Ontario is looking to Northern Ontario for its seed potatoes, as the crops of the north have been quite free from these diseases and of excellent quality. England has long made a similar practice of getting her seed from Scotland, and it would be well if we would begin to consider in time the advantages of getting northern seed from Dauphin and Swau River districts, and even from The Pas, where potatoes grow splendidly and quite free from disease. I saw large patches of potatoes at The Pas and along the Hudson's Bay railway last fall, which, although late, and only in bloom in the last week in August, yet had tubers well set, of good quality, and in every case entirely free from disease. These potatoes should be used entirely for seed, as their immaturity is just what is desir-

able in potato sets. It would pay to trade the mature sets of the south for the immature sets of the north, which show greater setting propensities and are much freer from disease. The long days of sunshine, the cool nights and the heavy dews seem to be ideal for potato growing, whereas the hot days and drying winds of the south seem to cause leaf roll.

Black Leg

In 1905, 10 to 75 per cent of the potatoes of Canada were affected with black leg. In 1910, 40 to 60 per cent of the potatoes in Galicia and 5 per cent of the potatoes in Great Britain were affected, but of recent years this seems not to have been so bad in Canada.

In 1916, the rust year, when conditions were favorable for all plant diseases, black leg was quite common, and last year, being dry, with less than three inches of rainfall during the growing season, there was very little black leg. Being bacterial, ground moisture greatly favors its development at the ground level. Black leg is recognized by the yellowing of the leaves here and there in the patch, the stems of which plants pull easily out of the ground, there being either no potatoes or the stems having rotted off, leaving them in the ground. The stem blackens at the base, turns soft, the pith decays, and the cambium ring of the cortex becomes spotted or a brown pigment in the fibro-vascular bundles. If the disease occurs late in the development of the potato, it spreads to the set, entering the "heel" or stem end, spreading from the cambium ring to the starchy tissue, darkening and softening it as it goes, eventually causing a hollow end.

Wire worms have been found to spread black leg, and perhaps other biting insects are factors in its spread, but, as one usually finds decayed sets where black leg occurs, it is surmised that it more generally spreads from the sets, and the wireworm may be a factor in the spreading. But, as it is usually isolated and seldom occurs in patches, we seem quite right in assuming that the diseased set is to blame.

NEW BEE LITERATURE

The Manitoba Beekeepers' Association has issued a new booklet announcing the work being carried on under its auspices, and also presenting considerable advice of a practical nature to beekeepers. Members wishing a free copy should write R. M. Muckle, Provincial Apiarist, Manitoba Dept. of Agriculture, Winnipeg.

NOTES FROM THE FRUIT GARDEN, SEASON OF 1917

By A. P. Stevenson, Morden, Man.,
at the Annual Convention.

The winter of 1916-1917 was the worst from a horticultural point of view, we have had for many years. The snowfall was above the average, and, unlike the previous winter, we had very little damage done to the young fruit trees by rabbits but the spring revealed considerable damage done by mice under the snow, especially among the two- and three-year apple trees.

The spring was rather backward for some time, but a few days of extra warm weather in May brought things in the fruit garden on with a rush.

Apples

It was soon noticed that the standard apple crop was to be a light one, few blossoms appearing on some of our well-tested varieties. Others, again, were covered with blossoms, and set full crops of fruit. Among these were Blushed Calville, Repka Kislaga, and Koursk Anis. The varieties giving half a crop were Hibernial, Charlamoff, Antonovka, Simbrisk, Ostrekoff, P. G. Red, and Winnifred. The varieties giving no crop were Gipsy Girl, Volga Anis, Duchess, Herren, and Lowland Raspberry. None of these old named varieties appeared to suffer from winter injury, but some varieties of Minnesota seedlings of great promise, and planted seven years, with every appearance of being perfectly hardy, and which had reached a height of about eight feet, are dead and gone. These varieties were named the Evelyn, University, and Red Wing. In regard to hardiness of apple trees we had a good object lesson in our orchard in the spring of 1917.

Crab Apples

The crab apple crop was extra heavy, especially the Transcendent variety. The Hyslop and Lyman's also gave full average crops. The Philips and Whitney varieties carried light crops.

Plums

The plum crop was away above the average, especially with the Mammoth and Cheney varieties, the branches having to be propped to keep from breaking under the weight of fruit. The Aitkin, Wyant, Forest Garden, and Surprise varieties gave fair average crops. The Terry, Patten's XX, and Kraken, American varieties of much promise, had killed back all their previous year's growth, and may prove too tender for our conditions.

That pest, the plum pocket, was entirely absent last year, conditions not being favorable for its propagation.

The size and quality of apples, crabs and plums was fully up to that of other years, but the appearance was very much spoiled on account of a hail storm that visited our orchard in July. The hail was small, but wherever the fruit was struck a black spot developed, which spoiled the appearance of the fruit. However, as this was the first hail storm we have experienced in forty years, there is not much reason to complain.

New Hybrids

Hansen's hybrids came through the winter in rather poor condition. We have come to the conclusion that unless grown as low bushes, so that the snow will nearly cover them over in winter, the more valuable of these hybrids, such as the crosses between the sand cherry and Sultan plum (named Etapa, Opata, Wachampa, Ezaptani, and Sapha) are too tender and unsafe to plant here.

The plum crosses promise better. These are hybrids of the wild plum crossed with the Chinese apricot. The best of them are the Kaga and Hanska. These two varieties have been in bearing with us for five years, and were, to all appearances, as hardy as the native plum, but the Hanska killed to the snow line last winter. The Kaga is going strong yet, and carried a fair crop during the past season. Sansota and Chersota are hybrids of the sand cherry crossed with the Desota plum. Sansota is the only variety of any standing with us; it showed no signs of winter injury, but a late frost killed the blossom, and in consequence there was no fruit.

Compass Cherry

The Compass cherry wintered well. We have had this variety growing on our grounds for eighteen years, so it may be safely classed as quite hardy. A good half crop was gathered.

Other Cherries

The Vladimir, Japanese and Champa are all true cherry seedlings of great promise, both in the quality of their fruit and hardiness of bush. We found no evidence of winter injury. A late frost injured the blossom, so less than half a crop was harvested.

Red Raspberries

The red raspberry crop was good. Minnesota No. 4 raspberry is coming to the front with a speed that bids fair to place it in the class now occupied by the Herbert.

Black Raspberries

The black variety, Older, on account of the extreme dry weather, only produced half a crop, and for the same reason the blackberry, Agawam and Windom Dewberry, gave no crop.

Strawberries

The dry summer also accounted for a light crop of strawberries, especially with the June bearing sorts, Minnesota No. 3 and Dunlop being the best croppers. The everbearing varieties did not produce as heavily as last year, the Americus variety again giving best results on our heavy clay soil. The Minnesota 1017 is a new variety of great promise, but we do not consider it as drought-resistant as the Americus.

Gooseberries

The Carrie gooseberry gave an extra heavy crop of fruit, of a size larger than the Houghton. The Rideau (one of the late Dr. Saunders' creations), though not so prolific, has larger fruit, of fine quality, color light green. Downing, White Transparent, Pearl, and Champion had no crop.

Currants

Red and white currants were a full crop, the Red Dutch being the most prolific bearer, but the Perfection carried the largest and finest quality of fruit.

The White Grape and Lee's Prolific were the best bearers in their class during the past season.

Grapes

The Beta and Hungarian are the only varieties of grapes grown. The Beta only carried a few bunches to maturity.

New Lines

Of some of the promising new things on trial might be mentioned the following:

Pyrus Ovoidea, a Chinese sand pear, native of Northern Mongolia;

Pyrus Ussuriensis, a wild pear from the Pacific coast sections of Siberia;

Sorbus Aucupariaedilus, a mountain ash with edible berries;

Ojiby Plum. This is a hybrid crossed with a wild Manitoba plum;

Cree Plum. This is a Manitoba wild plum crossed with Burbank's Combination plum;

Pembina Plum. A Manitoba wild plum crossed with a Japanese plum;

Seven varieties of crossbred pears;

Moscow Cherries, from Sparrow Hills, Northern Russia;

Amygdalus Davidania, a wild Chinese peach;

Ohta Red Raspberry. A wild red raspberry crossed with Minnesota Ironclad;

Prunus Armeniaca. The wild Chinese apricot;

Ulmus Pumila. Ehn from Northern China;

Out of some of the above new things something of value to suit our conditions might be obtained, but they are now only on their good behavior.

HORTICULTURE AT THE EXPERIMENTAL STATION FOR CENTRAL SASKATCHEWAN

Paper by W. A. Munro, Superintendent,
Rosthern, Sask.

I regret that I have very little to report in the line of horticulture for the season of 1917. The hail storm of August 3rd, 1916, killed practically all of the 1917 fruit-bearing canes in raspberries and currants, but strawberries as usual proved a large crop.

I believe a great deal more effort ought to be put forth by professional horticulturists toward impressing the people of the West with the importance of small fruits and especially strawberries. A small patch does not require a great deal of time, and an area of 40 feet square is quite sufficient to supply an ordinary family. We have not had a failure in this crop since we began delaying the removal of the mulch until the last week in May. Late removal of the mulch delays the ripening of the fruit, but it insures against the destruction of the blossoms by late frosts.

Tomatoes have been doing well with us since we have instituted a series of experiments on the training of the vines. We have learned that tomatoes trimmed to one or not more than two stems and trellised to a stake or wire produce larger fruit, more fruit by weight, and more nearly mature fruit than if left on the ground or allowed to develop a number of branches and foliage.

Again, in ripening tomatoes we have found very satisfactory results by keeping them in a cool, dark place, preferably bound in something such as straw or wrapped in papers and closed in boxes.

Celery is a vegetable we have found very easy to deal with after the plants are started in the spring, but sometimes difficulty is experienced in getting seed to germinate. We have tried trenching, planting on the level and banking with boards, with earth and with tar paper roofing, and of the four methods, considering cost of labor, cost of material and quality of vegetable, that planting on the level and banking with earth proves

the most satisfactory. Then, in storing celery, we met with such results in 1917 that to date (February 11th, 1918) we have a quantity of tender, crisp stalks that are likely to remain in good condition for another two months. To do this, we planted them in about four inches of their own soil on the basement floor of our own residence and moistened the soil at intervals all winter. The temperature of the basement varies from 32 to 38 degrees F.

Our show of perennials was very inferior in 1917, because of the effect of the hail storm the previous season, and our show of annuals was reduced because of late spring frosts. We also experienced difficulty in obtaining seed of different varieties of annuals.

Every season adds considerably to our experience in methods of cultivation and varieties, but we are assured that small fruits and vegetables of almost all kinds can be produced abundantly in Northern Saskatchewan if given reasonable attention, and I am surprised that more people do not take advantage of the opportunities afforded them in growing small fruits and vegetables.

A FRANK STATEMENT

This is the fifth year of publication of *The Manitoba Horticulturist*. The idea of the Association in starting it was to present an eight-page monthly publication.

By itself, the work of editing eight pages of such matter each month is not a very big job. But when it comes as an "extra" on the top of numerous other crowded activities it becomes much more difficult to perform.

This is the reason why, within the past year, sometimes two months' issues have been crowded together into one sixteen page issue. It has not been because the editor was drunk, but because other more direct duties were receiving right-of-way.

This time the June and July issues are consolidated. We hope our readers will accept the sixteen pages now as an equivalent of two eight-page issues.

As the front page suggests, Mr. Watson has been asked to head up a movement to secure more Manitoba contributions. We want your experience. The especial function of *The Horticulturist* is to further the horticultural progress of Manitoba, and to do this we must have Manitoba experiences written up. Can you help?



Garden in Mennonite Village, Ten Miles South-east of Morden, Manitoba.

FREE CANNING BULLETIN

If you have not received the bulletin, "Canning by the Cold Pack Method," you may have a copy by writing to the Publications Branch, Manitoba Department of Agriculture, Winnipeg.

Nearly 20,000 copies of this bulletin were distributed last summer.

SUMMARY REPORT ON HORTICULTURAL WORK CONDUCTED ON THE SCOTT EXPERIMENTAL STATION, SEASON OF 1917

Paper as read at the Annual Convention of the Manitoba Horticultural and Forestry Association.

The work during the season consisted principally in testing out varieties of vegetables, flowers, small fruits, trees and shrubs, etc. In addition, some attention was given to cultural experiments with vegetables. In all, 143 varieties of vegetables and 29 sorts of potatoes, 286 varieties of herbaceous flowering plants, 47 kinds of small fruits and 130 specimen trees and shrubs were under test.

The horticultural work on the station is carried out under the conditions existing on the average prairie farm, that is to say, the station is located in a district where practically no native trees are growing. Artificial watering is not practised, and no green house is available for starting plants, the ordinary hot bed being used for this purpose. Nevertheless, good crops of most kinds of hardy vegetables were harvested, flowers bloomed well and trees and shrubs made good growth.

The season of 1917 was unusually dry, and at no time in our experience has the value of careful cultural methods given better results. Many of the gardens in this section of Saskatchewan were failures, due to poor preparation of seed beds.

One of the most popular lines of work is testing out and distributing varieties of potatoes. Reports received in 1917 on samples sent out show the Everett to be one of the best yielding varieties of the early potatoes. This is no doubt largely due to the fact that the Everett makes a vigorous growth during the early part of the season. As a rule the Wee McGregor and Rawlings' Kidney have been reported as giving the better results.

The experiments on the station included dates of planting potatoes, and we are now prepared to recommend planting about May 8th to 12th. Early maturity and an increase in yield was secured by allowing short green sprouts to develop on the tubers before planting. Cutting the potatoes to three eyes in a set has almost invariably given heavier yields than planting whole small potatoes or sets with lesser number of eyes.

Sixteen varieties of garden peas were tried out. The Stratagen gave the heaviest yield of green peas, while the American Wonder gave the best yields of the early sorts. In dates of sowing garden peas, it was found that four varieties requiring different periods for maturing gave approximately three times the yield that was realized from an early maturing sort sown at weekly intervals for four successive weeks. The period for harvesting green peas was lengthened 25 days by using the four varieties. Where the one

variety was sown at weekly intervals for four successive weeks, the late plantings were only eight days behind the first planting in being fit for use. Using chicken wire for trellis for the garden peas increased the yield in 1916, which was a wet season, but decreased the yield in 1917. It is interesting to note that home grown pea seed gave more vigorous vines and heavier yields of threshed peas than imported seed.

For the most part the varieties of vegetables recommended in the Experimental Farms reports are continuing to give the best returns. Of the early cabbage, Paris Market gave much better results than usual in 1917, being fit for use ten days ahead of the Early Jersey Wakefield. In red cabbage, the Black Diamond is one of the earliest sorts tested.

An experiment to determine the possibility of producing onion sets has worked out well. Good crops of sets have been secured during the past two seasons by sowing onion seed in rows at the rate of about 100 seeds to the lineal foot. The plants are not thinned out, but the bulbs were harvested in the fall and kept in a dry place and away from frost until required for planting.

Vegetables that have not done so well include cucumbers, melons, citrons, leeks, celery, corn. One reason that these vegetables have not proven satisfactory has been the effect of the wind. An attempt is being made to protect the garden by planting a caragana hedge around the border. It will require several years before the full benefit of this hedge will be realized.

In the flower gardens several new ornamental plants were tested out. These include the red sunflower, which grew well with a high percentage of the flowers with a distinct reddish shade. Japanese striped maize proved frost tender, but might be useful in some of the older sections of the West. An annual larkspur (Rosy Scarlet) produced a wealth of bloom for a lengthy season. Of the little border plants, *Lobelia*, the *Ramosa* (Tunuior) blue, is comparatively new and has proven to be a beautiful free flowering sort. Japanese Pink, *Dianthus Heddewegii*, produced brilliantly colored flowers.

Comparison was made between starting a number of the hardy flowers in the hot bed with sowing the seeds early in the season in the garden. Starting in the hot bed lengthened the flowering season in most cases, although a few of the rapidly growing flowers that were sown

outside blossomed almost as early as those that had been started in the hot-bed.

Flowering shrubs are deserving of wider recognition than they are receiving at present. Shrubs such as the bush honeysuckle, various forms of the caragana, several varieties of spiraea, flowering currants, and hardy varieties of lilac should be more commonly grown. Two varieties of spiraea that nurserymen would do well to secure are the *Spiraea Oblongifolia*, and *Spiraea Arguta*. The former produces a wealth of blossom, flowering early in the season, the latter blooms quite early in the spring and, while a smaller shrub than the *Spiraea Van Houttei*, has given us a greater wealth of bloom.

In deciduous trees, *Populus Petrowskyana*, a variety of the Russian poplar, has proven to be quite hardy, and one of the most rapid growing trees on the station. In the spring of 1916, when the Alberta Cottonwoods were frozen back to almost the ground, and the Norway poplar was killed outright, the *Populus Petrowskyana* proved quite hardy. For prairie conditions where a rapid growth is urgent, we would suggest the use of this poplar.

Of the varieties of evergreen trees tested, the white spruce (*Picea Alba*) and Lodgepole pine (*Pinus Contorta Murrayana*) have grown well even where planted out on the lawn where no protection of any kind is afforded. No attempt has been made to start evergreen trees from seed on the station, but each year all the cuttings available are taken from the Russian poplar and Laurel Leaf willow. These are either started in the nursery and used for work on the station, and the surplus sent out to farmers, or the cuttings sent direct to those requiring them.

Work along this line is being started with some of the superior varieties of small fruits that have been tested. It is hoped it will be possible in the near future to supply nurserymen with limited quantities of some of the hardiest, best yielding and best flavored varieties that have resulted from the hybridising work that is being carried on at the Central Experimental Farm at Ottawa.

BEEKEEPERS' FIELD MEETS

A provincial field meet of the Manitoba Beekeepers' Association will be held on July 19th at the home of G. M. Newton, one mile south of Selkirk. Other meets will be held during the summer at Teulon, Manitow, Dominion City, Souris, Altamont, Minitonas and other places.

NATIVE FLORA OF THE NORTH

W. J. Boughen, of Valley River, Manitoba, in a letter of greeting to the recent convention, writes:

"I have found two mountain ash in the Duck Mountains; the climbing bitter-sweet (*Celastrus Scandens*) and the wild plum are also here, farther north than I thought, and on a creek the native elderberry grows aplenty. Many of the trees (spruce) are beautiful in blues, and of fine pyramidal form.

"At home I have a large and nearly chokeless choke-cherry, which I have valued for four years, and last year I sent some fruit out, and received a very laudatory letter from Prof. Hansen, and an order for trees. I expect to put it in propagation, in fact I have a three-year seedling which may fruit next summer and I shall know if it is a distinct variety. I have other seed planted."

VACANT LOT GARDENING IN ONTARIO

The following is quoted from the report of Mr. J. Lockie Wilson, Superintendent of Ontario Horticultural Societies:

"The majority of the Horticultural Societies in this province have accomplished great things with their vacant lot propaganda. In the cities of Toronto and Ottawa alone many acres have been cultivated.

"Ottawa reports over 100 acres, from which 50,000 bushels of valuable garden products have been garnered in first-class condition.

"Those interested in horticulture in Toronto through the Vacant Lot Gardening Association have also done a splendid work, and in a large way. The report issued by the Superintendent, Mr. Geo. Baldwin, states: Number of lots under cultivation during 1917, 798, all well cultivated. Number of soldiers and soldiers' families working lots, 80. Average size of lots, 3,000 square feet, all marked with signboard. Packages of seeds provided, 725, of which 607 were paid for. Several churches, hospitals, homes, girl guides, boy scouts, included in lot holders. One lot looked after by a returned soldier who lost both his legs, another by a man with only one hand. The condition of both these lots would shame those who are not thus seriously handicapped. All gardens are inspected once a week and reminders sent to those who neglect their plots. The crops produced have a value of \$40,000 at a moderate estimate. It is

expected that 1,000 lots will be plowed before cold weather sets in. Lot holders can have the same ground next year provided it can be secured from the owners and on condition that it has been satisfactorily worked in 1917, that a full report has been sent in, and that a written application is made to the secretary not later than February 28th, accompanied by a membership fee of \$1.00."

NATIONAL OR STATE FLOWERS

In connection with the proposal to select a national flower for Canada, the following list of flowers, used as national or state flowers, may be of interest:

Flower	Country
Rose.....	England.
Thistle.....	Scotland.
Shamrock.....	Ireland.
Blue Flag or Iris.....	France.
Saguaro or Giant Cactus.....	Arizona.
Apple Blossom.....	Arkansas.
Golden Poppy.....	California.
Blue Columbine.....	Colorado.
Mountain Laurel.....	Connecticut.
Peach Blossom.....	Delaware.
Orange Blossom.....	Florida.
Cherokee Rose.....	Georgia.
Syringa.....	Idaho.
Violet.....	Illinois.
Carnation.....	Indiana.
Wild Rose.....	Iowa.
Sunflower.....	Kansas.
Trumpet Vine.....	Kentucky.
Magnolia.....	Louisiana.
Pine Cone and Tassel.....	Maine.
Apple Blossom.....	Michigan.
Moccasin Flower.....	Minnesota.
Magnolia.....	Mississippi.
Bitter Root.....	Montana.
Goldenrod.....	Nebraska.
Sagebrush.....	Nevada.
Cactus.....	New Mexico.
Rose.....	New York.
Daisy.....	North Carolina.
Wild Prairie Rose.....	North Dakota.
Scarlet Carnation.....	Ohio.
Mistletoe.....	Oklahoma.
Oregon Grape.....	Oregon.
Violet.....	Rhode Island.
Pasque Flower.....	South Dakota.
Bluebonnet.....	Texas.
Sego.....	Utah.
Red Clover.....	Vermont.
Rhododendron.....	Washington.
Rhododendron.....	West Virginia.
Violet.....	Wisconsin.
Indian Paintbrush.....	Wyoming.

Twenty-five of these flowers were declared state flowers by legislative enactment, while ten were made so by common

consent, and seven others by choice of the school children.

The committee of the Manitoba Horticultural and Forestry Association, appointed to propose a national flower for Canada, has suggested the native columbine (*Aquilegia Canadensis*), and this suggestion has been approved by the board of directors. The flower is a native of all parts of Canada.

The following notes upon the columbine were prepared by an Ottawa committee:

Botanical Name—*Aquilegia* (pronounced Ak-wil-ee-ji-a).

Crowfoot Family—Near relatives, the buttercup, hepatica, larkspur, Canadian species, *Aquilegia Canadensis* and three varieties of the same.

Distribution—Native to rocky places and open woods throughout Canada, widely distributed.

Adaptability—Can be adapted with success to nearly all soils and localities. Does well under garden cultivation. Easily raised from seed and the young plants can be transplanted with success. Many hybrid varieties resulting from crossing native and European species are now in cultivation. Colors many and beautiful. Season of bloom, May to July.

Interesting Notes from its History—The name columbine is supposed to be derived from the Latin "columba," a dove owing to the fact that a detached petal with the attached sepals resembles a dove with expanded wings. The name *aquilegia*, on the other hand, is traced by some to "aquila," the eagle, by others to "aquilegus," water holder.

The columbine was used in heraldic devices as far back as 1565. A beautiful yellow variety from California (*chrysantha*) and another blue and white variety from *Sibirica* (*glandulosa*) have been used to produce many beautiful hybrid varieties of modern introduction.

THE PUSH HOE

"The man with the hoe," if he is up-to-date, is probably using a push hoe. You don't see very many of them yet, but they are coming into use. Leading market gardeners are using them for weeding, and other people are "catching on" to the idea.

The push hoe is much like a long-handled bent spud, with a cutting surface six inches across. If kept sharp they work more easily than the common hoe, and do not pull the soil about so much. They glide along half an inch below the surface and cut off the weeds.

Try one, anyway.

TO IMPROVE VACANT LOT GARDENING IN WINNIPEG

At the last meeting of the Directors of the Manitoba Horticultural and Forestry Association, held June 17th, it was decided to suggest to the City of Winnipeg that instead of waiting until next spring to receive applications for plowing grass-covered vacant lots, and then proceed to plow these out of sod in April and May, applications be now accepted and the land broken and backset this summer.

This is the correct way to prepare new ground, and the returns for several years will thus be improved.

The fact that the war needs, for more food will grow for years, makes it practically certain that even a larger acreage of vacant lot property will be utilized next season, in which case it is only a question as to whether the breaking will be done now or next spring.

PAPER CONTAINERS FOR HONEY

F. W. L. Sladen, Apiarist for the Dominion Experimental Farms, reports success in the use of paper containers for honey instead of tin pails. He says that nearly all kinds of honey produced in Canada will granulate hard six to eight weeks after extraction, and in this form can be conveniently distributed in small quantities in attractive, inexpensive containers made of paper. The paper containers cost only about one-fifth the price of the tins, but are a little more tedious to handle. Interested beekeeper should write Mr. Sladen for full particulars.

"SEASONABLE HINTS," BY THE DOMINION HORTICULTURIST

Potatoes

If the potato beetles have not been all killed by the time this reaches the reader, there should be no delay in poisoning them. Anything which injures the foliage will lessen the crop; hence the leaves should be kept as free as possible from injury caused by insect or disease. A mixture of eight to ten ounces of Paris green and three-quarters of a pound of powdered arsenate of lead, or one and one-half pounds of paste arsenate of lead to 40 gallons water, has been found more satisfactory than either poison applied separately.

Deep cultivation of potatoes in July may do more harm than good by destroying roots and drying out the upper few

inches of soil where tubers are forming. If the tops have not already met and cultivation is still necessary, it should be very shallow, or just enough to conserve the moisture. Sometimes hilling up gives better results than leaving the soil level, especially if it is a wet season and the soil heavy. In loose and sandy soil, level cultivation is likely to give better results in all seasons.

Conservation of moisture by shallow cultivation is very important, as tubers will not develop if the soil is dry. If the plants are kept in a healthy condition until the hot weather of mid-summer is over, during which time if the weather is dry few tubers will grow, the grower will be well repaid by the great development of tubers that will take place when the ground becomes moister and the weather cooler.

Care of the Vegetable Garden

In order to have crisp, succulent vegetables, growth should not be checked and, while in seasons which are cool and moist the cultivation or loosening of the surface soil is not so important as in seasons which are hot and dry, it will be found very profitable, no matter what the season, to loosen the surface with the hoe or rake after every rain. In dry seasons this conserves the precious moisture, and in both dry and wet seasons it permits the air to enter the ground freely to promote growth.

If cauliflowers do not have an abundance of moisture they will not head well.

Celery will go to seed if checked in its growth from lack of moisture; hence the importance of keeping this vegetable growing well, which can usually be accomplished by keeping the ground well cultivated. If there is a protracted drought it will be desirable, if practicable, to water the celery thoroughly.

The asparagus and rhubarb beds should receive a heavy application of manure as soon as possible after the cutting season is over. Do not wait until spring, as this will be too late to affect the crop materially. Manuring now will help to make strong growth this season, which will mean that good crowns will be built up to furnish stalks for cutting next spring. As a rule both asparagus and rhubarb are cut later in the season than they should be, with the result that the plants are weakened, the stalks become small, and maximum crops are not produced from year to year. Neither of these vegetables should be cut after the first of July.

FRESH VEGETABLES IN THE DIET

By Frank T. Sburt, Dominion Chemist,
Ottawa

The importance of fresh vegetables in the ordinary diet has, we think, been overlooked in the past by many farmers; their greater use may be urged on two grounds, as partial substitutes for meat and wheat in these war times and as wholesome, palatable, attractive adjuncts to the day's bill of fare, supplying mineral and other substances essential to good health.

As savers of meat and bread.—It cannot be claimed that fresh fruit and vegetables may be used to replace entirely the staple and more substantial foods, meat, milk, eggs, cheese, bread, for as a class they are poor in the body building nutrient (protein) and in fat, the most important of the nutrients in heat and energy production in the body. Nevertheless many of these have a distinct value as savers of meat and bread and in these times it is desirable, if not imperative, that they should be so used.

Prominent among the vegetables that may be employed to advantage to partially replace meat are **beans and peas**. These, unlike vegetables in general, are particularly rich in protein, though it must be admitted that their protein is not of equal value in human nutrition with that of meat. Alone or in combinations (milk-vegetable soups, chowder, soufflé or omelet) they make nutritious, wholesome and palatable dishes, easily permitting the reduction of 25 per cent in the meat account.

Potatoes can be advantageously used to save bread: indeed, in spite of their somewhat low protein content they stand out on this continent as the most important substitute of the cereals. Roughly speaking, a potato of 4 ounces will furnish as much nutriment as an ounce of bread, though the latter will be slightly the richer in protein. They are essentially starchy and being highly digestible when properly cooked may well be employed to furnish a large part of the daily ration for the production of heat and energy in the body. By the free use of potatoes, the quantity of flour ordinarily consumed—as bread, buns, biscuits, etc., may easily be cut down 25 per cent, without any discomfort to the family. They are cooked with practically no loss of nutritive value by boiling or baking in their skins. The outer skin with its immediately

underlying layer (peel) is much richer in protein and ash constituents than the body of the potato and hence furnishes in the baked tuber (previously well washed) not only delicious but nourishing food.

Corn on the cob might also be mentioned among the vegetables of high nutritive value; it is no less nourishing than enjoyable and for several weeks in the season it may well furnish the chief dish at one meal in the day. Beets, parsnips, artichokes, carrots, all possess distinct food values.

Hygienic value. The food value of a few of the more important vegetables has been briefly mentioned. Of still greater value is the part that green, fresh vegetables play in the maintenance of good health. They contain certain salts and mineral compounds as necessary for our well being as the nutrients in our food. In this connection we may quote from an eminent English authority on foods, who says "It is considered essential that a fresh vegetable, such as cabbage, cauliflower, potato, lettuce or other salads (or fruit) should constitute a portion of at least one meal a day. The mineral salts of fresh vegetables render the blood and urine more alkaline and their fibre acts as a stimulus to the movements of the alimentary canal, promote intestinal secretion and counteracts a tendency to constipation."

FOOD VALUE OF MUSHROOMS

From the Annual Report of Ontario Agricultural College

During the past season many inquiries have been received concerning the food value of mushrooms. This has no doubt been due to a greater or less abundance of the plants in certain portions of the province, and also to the campaign for the conservation of food products.

In the past mushrooms have been considered as very nutritious. Sometimes they have been called "Vegetable Beefsteak," and have been said to have a food value of twice that of fresh vegetables. This high opinion of their food value may be due partly to their delicious flavor, making one eat large quantities. A chemical analysis shows that mushrooms are comparatively rich in nitrogen, and this was taken to indicate that they were rich in proteid. However, more careful analysis shows that much of the nitrogen

is in such combination as to make it unavailable for human nutrition.

Careful analysis of the available food materials in mushrooms shows that the cultivated mushroom has about the same food value as cabbage, but as bought in the market costs at least twenty-five times as much, and is only about one-tenth as nutritious as lean beef. Some of our wild mushrooms are still lower in food value. The ink caps are less than a fourth as nutritious as the cultivated mushroom, and about a fortieth as nutritious as beef. The Morel is about half as valuable as cabbage and one-twentieth as valuable as lean beef.

From the standpoint of foods the mushrooms, as a class, may be classified as very low in actual food value, but they are excellent as a relish, and their utilization from this standpoint should not be ignored and is worthy of much consideration.

One of the very few towns where no taxes are assessed is Freudenstadt, Germany. This town of 7,000 has an annual governmental expense of \$25,000, and pays it all from the revenue of 6,000 acres of town forest.

MANITOBA HORTICULTURAL AND FORESTRY ASSOCIATION

Incorporated Under Act of Manitoba Legislature

Life membership, \$10.00. Annual membership, \$1.00 per year. Special 25 cent rate to members of Affiliated Horticultural Societies at Local Points in Manitoba.

Officers for 1917:

Honorary Presidents—S. A. Bedford, Department of Agriculture, Winnipeg; President J. B. Reynolds, Manitoba Agricultural College, Winnipeg; Angus Mackay, Indian Head, Sask.

President—George Batho, 406 Maryland St., Winnipeg.

First Vice-Pres.—H. W. Watson, 205 Walnut St., Winnipeg.

Second Vice-Pres.—W. J. Boughen, Valley River, Man.

Directors—A. P. Stevenson, Morden; Norman M. Ross, Indian Head, Sask.; F. L. Skinner, Dropmore; and following all of Winnipeg, Mrs. H. M. Speechly, George Barratt, W. G. Scott, Jas. Cocks, S. G. Simpson, W. J. Harrison, Henry Downing.

Secretary-Treasurer—Prof. F. W. Brodrick, Manitoba Agricultural College, Winnipeg.

ALL ARE INVITED TO JOIN

MANITOBA HORTICULTURIST

Devoted to the better growing of Trees, Fruits, Vegetables and Flowers in Manitoba

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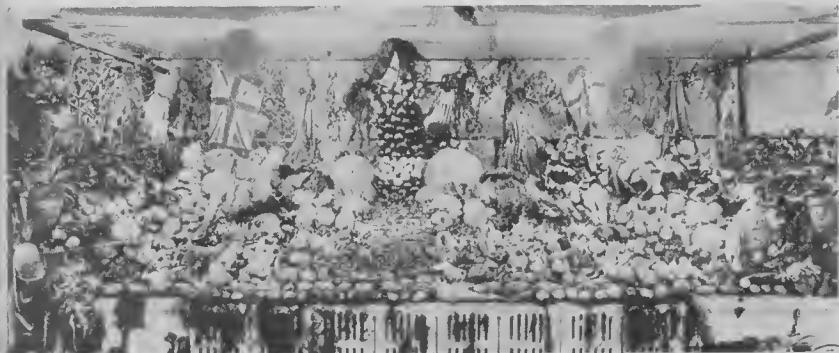
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WINNIPEG GARDEN SHOW

The Second Annual Exhibition of horticultural products for the province of Manitoba, to be held under the auspices of the Industrial Bureau, was staged in the large convention hall, Sept. 6th to 12th. With its cool cement floors, snowy white walls and ceiling, and its scores of powerful lights, the hall was an ideal place for such a display. It is no exaggeration to state that from the standpoint of quantity and quality of exhibits, the exhibition was far ahead of any such

in quality of products and extent of varieties. The display staged by the Tuxedo Convalescent Hospital, as well as that by the Knowles' Boys' Home, were especially creditable.

The groups placed by professional and amateur gardeners were greater in number and of much better quality than these of last year. A very encouraging feature was the competition in products from vacant lot gardens; the number of competitors was more than double those of last year, and the quality of the exhibits was fully 100 per cent better.



Vegetables grown by the Returned Soldiers at Tuxedo and exhibited at the Winnipeg Garden Show.

ever held in Western Canada, and is but a small indication of what Manitoba is doing in Canada's win-the-war campaign for greater production.

Special Displays

The group displays by the Winnipeg Parks Board and the Agricultural College were better than those of former years. The exhibit of products from the Greater Winnipeg Water District was much better in quality and presented many more varieties than last year, which speaks volumes for the wonderful development in this comparatively new district.

Group Displays

The competition in displays by agricultural societies was especially keen and presented considerable difficulty to the judges in placing the awards. Those placed by the St. Vital and Kildonan societies were exceptionally good, both

A new feature was added this year in the introduction of a competition among schools. About half a dozen schools had very creditable displays as well as many individual entries.

New Features

Notable among the new features were several displays of honey and a competition in various kinds of hen's eggs. Every afternoon and evening canning competitions were held for teams of children from the schools of the province. Great credit is due the Extension Service in making this feature so successful, and in creating so great an interest in the home canning of surplus products.

At noon of Wednesday, Sept. 11th, the directors tendered a complimentary luncheon to the exhibitors, at which encouraging reports were given by the various chairmen of the committees.



The St. Vital Agricultural Society captured the first prize for best general exhibit by a Agricultural or Horticultural Society.

About one hundred and twenty directors, exhibitors and specially invited guests partook of the luncheon and afterwards listened attentively to two apt and well-worded addresses from Premier Norris and Mayor Davidson.

The directors have reason to be greatly encouraged by the increasing number of exhibitors and the superior quality of their products.

It is very doubtful if a better display of the staple vegetables could be seen anywhere in Canada.

HORTICULTURAL PROGRESS IN THE WINNIPEG DISTRICT

During the Winnipeg Garden Show a very pleasant function was a luncheon at which reports were presented by the various committees. The following statements are gleaned from these reports as being of general interest:

Entries amounted to the magnificent total of 1558 as compared with 475 last year.

Amateur exhibits outnumbered the professional in the ratio of six to one.

Extra space was needed to the extent of 4450 square feet.

During the past season 676 applications for lots were handled in the secretary's office, and some 40 more are already in hand for attention this fall.

A conservative estimate would place the value of the average garden to the householder at \$35, and, working this out on the number of gardens in the city proper, it would mean that the city has

raised in garden truck the munificent sum of \$740,000.

"The educational features of our show are receiving the attention they so richly deserve from the citizens. Twelve teams of children from provincial points are giving demonstrations of canning and dehydrating of vegetables under the supervision of Miss Helen McDougall and Mr. S. T. Newton, of the Extension Service of the Manitoba Government. These demonstrations are proving of great benefit to those who are at a loss to know how to preserve their produce. We have, however, not gone forward in this connection as far as we should. What is really required is a cold storage plant, with every facility to be placed at the command of the citizens of Winnipeg to store vegetables. Our city council, through Mayor Davidson, has promised hearty support, and this is one of the great questions to be handled by this organization."

A new feature was the Industrial Employees' War Gardens contest. The report of the committee in charge, says: "Commencing activities on April 17th last, our aim was to give a boost to gardening in the industrial concerns in Greater Winnipeg, and among the employees of every business establishment in the community. Letters and pamphlets were sent out, and the results are more than satisfactory when it is considered that such a late start was made. Gardens have been started this season at the following plants: Beaver Soap Co., Ltd.; The T. Eaton Co., Ltd.; Winnipeg Ceiling and Roofing Co., Ltd.; Acme Sash and

Manitoba Horticulturist

406 Maryland St., Winnipeg.

A Monthly Periodical on Horticulture and Forestry in Manitoba.

Supplied free to all Members of the Manitoba Horticultural and Forestry Association.

Membership in the Association (including free subscription to this Journal) \$1.00 per year.

Editor.—George Batho, 406 Maryland Street, Winnipeg.

Door Co.; Dominion Bridge Co., Ltd.; Swift Canadian Co., Ltd.; Western Packing Co.; E. L. Drewry, Ltd. Both the Manitoba Free Press and the Creseent Creamery Co. held garden shows of their own, and the produce shown here (in the Industrial Employees' displays) is the product of the prizewinners in both concerns.

Mayor Davidson, in his address, said that the number of gardens in the city of Winnipeg, proper, had now reached a total of 21,319. The city, through the office of the street commissioner, had in the fall of 1917 and spring of 1918 plowed over 1000 acres of gardens.

Buy Victory Bonds.

POTATO STORING DON'TS

From the Minnesota Horticulturist

Don't store potatoes while they are moist.

Don't store without first sorting into table grade and culls for feed.

Don't expose potatoes to injury by frost after digging.

Don't let the wind dry out the potatoes. A bitter taste will result.

Don't bank potatoes without providing for a ventilator.

Don't store in a light room. Light lowers the quality.

Don't cover potatoes with damp earth when storing in a hot cellar. They will sprout if you do.

Don't forget to watch the thermometer. The ideal temperature is from 35 to 40 degrees Fahrenheit.

Don't forget to sort out the decayed potatoes before the trouble spreads.

Don't forget to serve freely every day. This will help to keep the storage supply up to table grade.

Have your garden manured with well rotted manure and plowed deeply this fall. Fall plowing is better than spring plowing.



Prize-winners in the Canning Contest at the Winnipeg Garden Show. The first prize-winners are at the right and are Hazel Black and Jennie Locke, Dauphin. The second prize-winners are Findlay Miller and Roy Lobb, Gladstone. The third prize team are Ottalie Graham and Kate MacKinnell, of Teulon.

THE CABBAGE ROOT MAGGOT

By A. V. Mitchener, Lecturer in Horticulture, Manitoba Agricultural College

A serious outbreak of cabbage root maggot (*Phorbia brassicae* Bouche) has occurred in the gardens around Winnipeg and in other parts of Manitoba. This insect is fairly common in Eastern Canada, and also in British Columbia, but this is the first outbreak of importance in Manitoba. The maggot usually manifests itself early in the season, but this year remained unnoticed and unreported until near the end of August. At present (Sept. 11) fully 90% to 95% of the cabbages and cauliflowers of many gardens are being attacked, and in many cases will be destroyed.

Injury was first noticed when the outer and larger leaves of the plants began to droop. This is almost the final stage. Many of the plants which show no sign of drooping are badly infested, and will soon reach this final stage. Upon pulling the plant out of the ground, numerous white maggots may be seen upon that part of the stem which was below the soil. Maggots are also found feeding upon the juices of the lower parts of the roots. When the stem becomes girdled, the plant is no longer able to pump up sufficient moisture from the soil, and consequently wilts. Not only is the cabbage attacked, but also this year the insect has been found upon cauliflowers, turnips and radishes.

The adult of this maggot is a fly, which somewhat resembles the house-fly, although it is smaller. It may be seen flying among the cabbage plants on warm days throughout the summer.

The adult female usually lays her eggs upon, or in the soil near the stem of the plant. These eggs are cylindrical, white, ridged longitudinally, and are about 1/25-inch in length. They are frequently laid in masses of fifteen to twenty eggs, although single eggs are commonly found. The average length of time spent in the egg stage is about five days, although more time is spent in this stage later in the season.

As soon as the larvae (maggots) emerge, they migrate to the stem or roots of the plant, where they at once begin to feed. They have no biting mouth parts, but at the anterior end of the body have two small blackish hooks with which they rasp the plant tissue, and free the juices of the stem, so that they may be absorbed by the growing larvae. It is in the larval condition that the injury is done to the

plant. A few larvae on the plant may not cause it to die, but the presence of a score or so will soon destroy the outside tissue of the stem, with resultant wilt and ultimate death of the plant. Usually three or four weeks are spent in the larval condition. The fully grown larva is white, somewhat blunt at the posterior end and pointed at the head end, and is about one-third inch in length.

The pupal stage occurs immediately the larva is fully grown. The outer skin of the maggot contracts, hardens and turns brown. Within this skin the larvae undergoes remarkable changes. After a period of from two to three weeks, the end of the pupal case breaks open, and the adult fly, already mentioned, emerges. Pupation takes place in the soil, and in the vicinity of the roots of the host plant. If one will dig in the soil around a diseased plant, one may find numerous brown pupal cases at various distances below the surface of the earth. Many of these pupal cases will produce flies next spring.

Remedial measures are not possible this late season of the year; yet this is an excellent time to call attention to the enormous damage that is being done, and to the fact that next year loss from the ravages of this insect may be largely prevented.

As soon as the plants are transplanted to the garden in the spring, they should be protected with tarred felt paper discs. The discs may be made as follows:

1. Cut out a six-sided piece of one-ply tarred felt paper. This piece should be about three inches in diameter.
2. From one corner on the edge of the disc slit the paper to the centre.
3. Using the centre of the disc as a starting point, make five more slits each about one-third inch long. These slits should radiate from the centre like the spokes of a wheel.

Where only a hundred or so discs are needed, they can be made easily with a good sharp knife, but where several thousand are needed, a special tool, which will stamp them out, should be used. This tool can be made by any hand-blacksmith. The discs should be made during the winter, so that they will be ready for use when wanted in the spring. At present prices 200 square feet of a good grade of tarred felt paper will cost about \$4.50. This amount will make at least 4,500 discs, and at that rate the discs cost one-tenth cent each. The material is cheap and the discs are easily applied.

Level the earth around the plant; then

slip the disc around it, and press firmly on the ground. When properly applied, the disc lies evenly upon the surface of the soil. Remember that **tarred felt paper** must be used. Ordinary tarred building paper is valueless, since it will curl up in the sun. Care must be taken to see that no earth lodges on the surface of the disc either when it is being applied or during subsequent cultivation. If any earth gets on the disc, brush it off.

As soon as possible, this autumn all diseased roots should be pulled and destroyed. This may be done by burning, or burying them deeply. Cabbage growers who wish any additional or more exhaustive information on the cabbage root maggot should communicate with this department at the College.

MEETING OF THE OFFICIAL HORTICULTURISTS' ASSOCIATION AT MANDAN, N.D., AUGUST 23rd AND 24th, 1918

By Prof. F. W. Brodrick, Manitoba
Agricultural College

There was gathered together at Mandan, North Dakota, on August 23-24, a body of horticultural experts whose deliberations will mean a great deal to the development of horticulture in this Northern Great Plains region. This initial meeting was so successful that those in attendance decided to form themselves into an Association in order that the problems confronting horticulture in this vast region might be dealt with in a co-ordinated, co-operative way.

At Mandan is located the most northerly federal trial station of the Great Plains region. This region includes the states of North and South Dakota, Minnesota, Montana, Iowa, Kansas and Oklahoma. The three Canadian Prairie Provinces of Manitoba, Saskatchewan and Alberta, where soil and climatic conditions are similar, are also included.

Representatives were present from a number of the states mentioned, while New Ontario and Manitoba also had representatives present.

The papers and addresses presented covered a wide range of subjects, but all applied to the problems relating to this particular region. One subject which was widely discussed was the question of hardiness, and a very general discussion took place as to where suitable hardy material could be secured. The general feeling was that Western Canada could supply quantities of native material that

would be valuable in developing plants suitable for this region. Many other problems came up for discussion, and it was clearly established that the best results could be secured if these problems were undertaken on a co-operative, international basis, as problems in horticulture are geographical rather than political.

HARDY ROSES

By A. P. Stevenson, at the Annual
Convention of the Manitoba Horticultural and Forestry Association

Rose culture is one of the most fascinating occupations in the line of horticulture. But when you come to talking or writing about it you scarcely know where to begin or want to say.

There are few lovers of flowers in this country but who desire to grow roses, but it is to be regretted that few get beyond that stage, or if they plant a few bushes, it often ends in failure. The rose gets the name of being a difficult flower to grow, and without doubt this is correct as compared with some shrubs and herbaceous plants. There are, however, some roses that are very easy to grow.

I have taken special interest in the growing of roses for many years, and have grown many different varieties with good, bad and indifferent success.

Roses usually cultivated at the present time may be divided into two groups as to hardiness. The hardiest group is composed of *Rosa Rugosa* and hybrids, Austrian Briars, Provence or Cabbage roses and Moss rose.

Roses of the second degree of hardiness include Hybrid Perpetuals, or Hybrid Remontant, and climbing roses, and it may be further noted that the hardiness of the individual varieties varies very much within the groups, some roses of the first group being the better of some protection, except in very favored localities.

Site and Soil

For best results, the rose requires plenty of sunshine, and if at all possible a site should be selected where the plants will have the sun for the greater part of the day. If this cannot be obtained, then the next best is where the plants will get the morning sun. A very unfavorable site for the bed is one where the heat of the sun at mid-day or afternoon will be reflected from the walls of the building, for in this strong heat the plants and flowers will not do well. All things considered, a

south-eastern exposure is the best. And, as roses love moisture and rich plant food, they should not be too near forest trees. But on the prairie it is important that the bed should have shelter from the wind, and be set where it will hold a good covering of snow in the winter. A rich clay loam will give best results with roses provided it is neither too wet nor too dry.

Plants and Planting

Strong two-year No. 1 plants are the best; one-year plants are not as suitable, although cheaper. Some varieties of roses do best on their own roots, while others that are not as vigorous do better on budded stocks. In the East it is advised to plant roses in the fall; however, we have found spring planting to give best results in this country. If received in the fall "heel in" the plants. The bushes should be planted deep, and when planting the soil should be tramped firmly about the bush. Roses, as a rule, have few roots, and none of these should be pruned off when planting; neither should they be exposed to the sun and wind when planting any longer than is absolutely necessary. Before handling, we advise that the roots be puddled in a mixture of clay and water, about the consistency of cream. If the plants are dry when received, they should be buried for two days in damp soil. By doing this the stems will take water from the soil and the plants will be saved.

If it is necessary to water the plants, do it thoroughly and not often. It is also advisable to spray the foliage with water occasionally, as this is a very effective remedy for insects. This spraying should be done in the evening or the early morning.

Soil should be kept rich with an annual supply of well rotted barnyard manure, applied on the surface and dug in.

Pruning

The manner of pruning roses varies considerably. Roses of the hardiest varieties nearly all bloom on wood of the previous year's growth or older; in consequence, if these are pruned severely, there will be few roses. All that is necessary is that the tall branches be trimmed back a little to keep the bush in shape. A little of the oldest wood may be removed each year, cut off close at the ground. All dead wood should always be removed.

The more tender varieties, or what are known as Hybrid Perpetuals, require to be pruned differently. These roses give best results if pruned vigorously each spring; cut down in fact to within six or

twelve inches of the ground. The pruning should always be done in early spring and the strongest and healthiest stems should be left.

Insects

One of the most common dangers to the rose in this country is the rose slug, which skeletonizes the leaves. Where there are but few bushes they may be picked off by hand or sprayed with paris green and water, the same as for potato bugs.

Red spider are tiny insects that work on the under side of the leaves, causing them to turn yellow. Frequent spraying of the under side of the leaves with water will help to keep these insects under control.

The aphid or lice are often troublesome. Spraying with kerosene emulsion is a reliable remedy for this trouble.

Varieties

The following list of roses has been successfully grown on our own grounds for many years, and for hardiness are divided into three groups:

1st. Roses that are perfectly hardy. To this list belongs the *Rosa Rugosa* semi-double red rose. The first specimen of this variety was planted on our ground twenty-seven years ago, is growing on the same spot yet, strong and vigorous in bloom annually. The bush is six feet high, and is trimmed occasionally. The only fertilizer is a few pails of liquid manure applied yearly.

Hansa—A *Rosa Rugosa* Hybrid. This is a fully double dark red rose; grows in clusters; very fragrant. Without doubt this is the hardiest of all fully double roses grown.

Blanc Double de Coubert—Another *Rosa Rugosa* hybrid. Flowers pure white, fully semi-double, in clusters, delightful, fragrant and produced very freely. Distinct, beautiful and hardy rose.

Cabbage Rose (or Banshee)—A light pink double rose, has been many years in cultivation; produces more rose buds than it can bring to maturity; our hardiest pink rose.

Scotch Yellow—A strong growing semi-double yellow rose. Our best of this class; has been in cultivation with us for twenty-six years.

This completes the list of varieties that are grown with us without any winter protection whatever, and are certainly the limit in hardiness of the cultivated roses.

2nd. The next group mentioned requires some light winter covering, such as bending down the bush and covering partially with earth. To this class belong such

Rugosa hybrids as Madam Georges Bruant. The flowers are paper white, semi-double, large and fragrant, produced at intervals all summer.

New Century—A hybrid, fully double, pink rose, shading to silver.

Sir Thos. Lipton—A pure white, fully double and finely cut rose.

C. F. Meyer—Another hybrid, with flowers of a clear silvery rose color. Is beautiful in the bud stage.

Of miscellaneous varieties the best are Persian Yellow, budded on strong growing stocks; Madam Plantier, a well known, beautiful, little, fully double, white rose; a very profuse bloomer.

Salet Moss and Crested Moss are the hardiest and best of their class we have found for our conditions.

3rd. The next group, the Hybrid Perpetuals, require good winter protection. This can be given in various ways. The method we use is as follows: In the late fall we bend the bush down to the ground and cover fully with soil to a depth of six inches, then throw some brush on top to help in holding the snow. We have tried many ways, but this is as good as any. Uncover gradually in the spring.

We can only mention a few of the many good hybrid Perpetuals that have bloomed with us, and these are as follows: General Jacqueminot, crimson. Paul Neyron, deep rose. Ulrich Brunner, cherry red. Margaret Dickson, white. M. P. Wilder, cherry. Mrs. John Lang, soft pink. The above list includes the best and the hardiest of the hybrid perpetuals. We have made no mention of climbing roses, all having so far proved failures with us.

RECORD POTATO YIELD PER ACRE

What is claimed to be the world's record production of marketable potatoes on one acre, 49,531 pounds, or 825 bushels, has been made on an acre tract of land near Kanab, in the southeastern section of Utah, just a few miles from the Arizona State line. The record yield was made in response to a competition fathered by the Mormon Church, and the church authorities drew a check for \$1,000, payable to a representative of Kanab Ward of the Kanab Stake of the church, which is responsible for the production. The church also paid prizes of \$500 and \$250 for the second and third largest yields respectively. Prizes of several thousand dollars were paid last year by the church for record yields of wheat and other food-stuffs. The potato yield for which \$1,000 was paid was certified to by more than 50 farmers.—From the Reclamation Record.

STANDARDS FOR JUDGING VEGETABLES

As Adopted at the Last Session of
The Manitoba Horticultural and
Forestry Association

Asparagus

Shoots should be thick, of medium length (8 to 9 inches) and uniform in thickness, tender, and free from rust and insect pests. Long shoots are liable to be woody and tough.

Beans

Broad Beans—Straight, broad, well formed pods, filled with large tender beans. Free from disease.

String Beans—Pods should be long, straight, moderately broad, tender, and free from disease. Pods should be uniform. Color according to variety.

Beets

Long—Should be medium in size, smooth and free from side roots, gradually tapering from crown to tip, and firm in texture. Cross-section cuttings should show fine dark red, tender flesh, free from white lines. Top small and compact. Roots should be uniform.

Round—Medium in size, firm, with smooth, round shape gradually tapering to a fine terminal root. Flesh should be tender, firm, fine, and of a dark red color. Roots should be uniform.

Cabbage

Early—Generally round or heart-shaped. The heads should have fair size, be heavy, firm, hard, and free from insect injury or disease.

Late—Heads round or slightly flattened in shape, with a dense formation of dark green outer leaves, and inside leaves of a cream color. Specimens should be heavy and have firm texture.

Red—Slightly conical or round in shape. Dark red in color. Texture firm and solid, with good weight.

Savoy—Round and slightly flattened. Leaves close and compact, of a dark green color with a fine curl—good weight.

Carrots

Long—Roots should be long, straight and smooth, without any green at the crown; have a small compact top, be free from side roots, and gradually taper from crown to tip. Texture, tender and crisp. Heart, small with a large outer ring. Roots should be uniform.

Medium—Medium length, straight, free from side roots and gradually tapering to a blunt tip. Skin smooth. Cross-sections should show a small core and a large outer ring. Flesh should be tender

and have a rich flavor. Roots should be uniform.

Cauliflower

Head, large in size with a dense formation of flower, pure white in color and without small leaves in the head. Shape, round horizontally, with a nice, even, curving crown. Cauliflower should be exhibited with a few of the lower leaves attached.

Citron

Large, well-rounded, heavy specimens finely mottled and well-colored throughout.

Celery

Bunch, composed of several long, well-bleached stems of medium diameter, free from rust and rot, with a crisp texture, and rich nutty flavor. Leaves, straight and even. Heart large.

Corn

Sweet—Cobs should have fair size and be well developed, with straight, even rows, well filled out at base and tassel end. The kernels should be tender, juicy and sweet. Ears should be uniform.

Cucumbers

Indoor—Should be long, smooth, with size well carried out towards the ends. Dark green in color; heavy.

Outdoor—Specimens should be smooth in form, straight, of medium length, with thickness carried well out towards the ends; of a dark green color and heavy weight. Specimens should be uniform.

Lettuce

Cabbage—Heads should be large, well-rounded, compact, composed of crisp, sweet leaves, free from any discoloration.

Cos—Conical in shape with straight, upright-growing leaves, well-bleached and crisp, and with a firm heart.

Onions

Large—Shape, globular or flat, according to variety; globular shape preferred. Should be smooth and even in form, of good weight, and have a small, well-ripened neck, with solid firm texture, especially at the base of the neck.

Pickling—Should range from $\frac{1}{2}$ inch to $\frac{3}{4}$ inch in diameter, be uniform in size and shape, clean, firm and white in color. Specimens should be uniform.

Parsley

Head, large and bushy, with numerous, finely curled, dark green leaves, which should be crisp and free from discoloration of any kind.

Parsnip

Roots should be of medium length, broad at top with a nicely hollowed crown, gradually tapering from crown to tip, smooth and straight, skin free from rust, firm in texture, and have a small core.

Peas

Pods long and straight, dark green in color and well filled with large, sweet flavored, tender peas. Samples should be uniform in size and color, and not over-ripe.

Potatoes

Specimens should have uniformity in size, with smooth even shape, firm, solid flesh, fine and white in color, and be clean and free from disease of any kind. Potatoes with shallow eyes are preferred to those with deep eyes.

Pumpkin

Round or oblong in shape, symmetrical large, thin-skinned, closely ribbed, firm in texture and heavy, with deep yellow or creamy yellow color according to variety.

Radish

Summer and Winter—Medium size smooth, even form; free from insect damage and side roots; firm texture and mild flavor. Cross-sections should show solid fine white flesh. Specimens should be uniform.

Rhubarb

Stalks, medium in diameter, long, straight and tender, with uniform color and mildly acid flavor.

Salsify

A good type resembles a well-formed parsnip, broad at top, smooth and straight, gradually tapering to tip, free from side roots, texture firm and crisp, skin light brown in color. Flesh should have a milky appearance when cut, and a small core.

Spinach

Specimens should be large with heavy foliage; broad, dark green, tender leaves, free from disease and insect injury.

Squash

Winter—Should be large, heavy and firm in texture, with color and shape according to variety. Should not be over-ripe.

Vegetable Marrow

Large size, oblong in form, smooth and even, with uniform thickness and good weight. Texture firm and not over-ripe. Color varies from a creamy yellow to a mottled green.

Tomatoes

Medium in size, with an even, well-rounded shape; smooth, fine, well-colored skin, firm texture, good weight and a small eye. Not over-ripe. Blossom end should be left on sample. Color varies according to variety—may be pink, bright red or yellow. Specimens should be uniform.

Turnips

Medium size, with smooth, symmetrical

form, free from side roots, firm in texture, and heavy. Cross-sections should show fine, firm, evenly colored flesh. Color varies from white to light yellow, according to variety.

Presented by—

F. W. Brodrick,
W. T. Macoun,
S. R. Henderson,
Committee.

MARKETING THE VEGETABLE CROP

By Marchant Bros., East Kildonan,
Man.

There is no set rule that we can go by in marketing the vegetable crop. The market for vegetables is controlled by the quantity grown at home and in the countries within shipping distance of our market. We depend on selling our vegetables here, as a rule.

When there is a general scarcity of vegetables at home and abroad, we have a good market; that is a market on which we can sell vegetables that are of fair quality at a good price.

How are we going to handle our business so we will have a good market, taking one year with another?

We should do our best to grow a first class quality of vegetable; a good article will help to sell itself, and poor vegetables are much harder to sell, and they hurt the market for the good produce. A man who has a reputation for handling good stuff and giving correct weight and measure always has a good demand for his produce, and generally gets the preference in any market.

Transportation goes a long way in helping a person in marketing his crop. We should provide adequate facilities for getting the vegetables on the market when there is a demand for them. Oftentimes a person will miss a good sale by being short of transportation. The time to market the vegetables to the best advantage is when there is a demand for them.

A producer should provide storage for part of his crop, so he will not be obliged to put it all on the market at once, therefore giving him a longer time to dispose of it, and by doing so will make a better demand for the vegetables.

Often, when vegetables are not up to the standard in size, careful sorting and grading will help them to find a ready market. As regards getting in closer touch with the consumer, it is a question

that has been much talked about, and has been put in practice at different times. Anything in that line will help to make a larger sale for vegetables.

It takes considerable time to place a load of early vegetables at the doors of the consumers. If a man had to sell all of his vegetables that way, it would put a limit on what quantity he should grow. Often a person is in a better position to grow a lot of stuff and wholesale it than he would be to retail it.

In selecting what kind of vegetables a person should grow, he should have an eye on what the market demands, and sow his crop accordingly. In some lines there is a limited demand, and in others you might say, unlimited. That would probably save a glut of any one variety.

Now, take the early vegetables. They are, as a rule, quite perishable, and will soon wilt in the hot weather. How are we to get them on the market in the best condition? This suggestion might help somewhat: In collecting the vegetables from the garden, gather what you want for each day early in the morning, while they are still cool and fresh from the night air. Place them in a cool building. You will find next morning that they are much fresher than those pulled in the afternoon when the sun is hot; and they will have a much better flavor when put on the table. Anything we can do to make the vegetables look nicer and taste better will help us to sell them.

CELERY CULTURE

By George Barratt, St. James, Man.

In writing this paper on celery culture, it is not my intention to go into details of sowing seed, transplanting, etc., but to touch on certain points which I hope may interest gardeners, and encourage a discussion on the same.

There are around Winnipeg all essentials for raising good crops of celery; that is, good land, plenty of manure easily obtainable, and lots of water; and yet we let outsiders bring in thousands of dollars worth of celery that might be produced right here. Surely we ought to be able to compete with people who live thousands of miles away. The celery from B.C. has become very popular in our market, and deservedly so, for it certainly is a good article, and has good keeping qualities. I do not know where or how they grow it in B.C., but after observing how fresh and solid it appears after travelling that great distance, one may be sure that it

was well supplied with water while growing.

The man who owns fairly good ground, and abundance of water, can make as much money growing celery, I might say more, than any other crop that I know of.

It can be grown to a good size by planting 8-inch by 10-inch in beds, but must have plenty of water. Grown this way it is self-blanching, but needs something, such as boards, hay or straw, on the outside of the beds.

I would like to tell you how I grew a small patch last summer (1917) that made at the rate of \$1300.00 per acre. This was not grown in beds, but in rows four feet apart. There were seven rows, less than 30 yards long, so the piece altogether was less than the sixteenth part of an acre. I sold 86 dozen, averaging a little over 91¢ per dozen, the price ranging from 60¢ to \$1.25 per dozen, making \$78.65. The land was not especially manured for this crop. It was originally a low place, and has been filled up from time to time with soil and manure, and has been dug for the last few years, not plowed.

The plants were not put in until July 2nd, which was too late to get the best results. I made shallow trenches by running the wheelhoe with small plow along and back on the same row, throwing the soil equally on both sides, afterwards pulling it away from the trench with a large rake, which raised the whole of the space between the rows enough to shed the rain to the plants, and making it more convenient for watering.

This patch was conveniently near a pump worked by a gasoline engine, and so could be reached by a hose, and was given plenty of water once a week.

By the middle of August the plants were large enough to start earthing up, but I delayed doing so until the first week in September, as soil rusts them in hot weather.

Before earthing up all young sprouts around the base were trimmed off, and a string tied around each plant. This, I consider, time well spent, as it made it much easier to place soil around and make it firm. It also makes it possible to place soil higher when earthing the first time, and it closes the plant, keeping soil from getting into the heart. After enough soil has been put to them, it is pressed firm near the top with a hoe as often as the leaves press the soil away, making an opening for frost to drop down.

This was only a fair crop, a long way from what might be done, as I might have planted a month earlier, and got a much heavier crop.

Although it is very desirable to be able to apply water at any time, we need not despair of growing a crop without. In fact, some of the best crops I have seen have been grown without artificial watering. Where one has to do without water, I would recommend plowing in the fall, using a liberal quantity of manure. Fresh manure, in my opinion, is much better than old hotbeds, or half rotted. Don't waste it by trying to burn the straw, but bury it all, and it will be found to be decayed sufficiently by the time the plants need it. Then after the freeze-up and before much snow falls, put on more stable manure (with plenty of straw in it) in heaps, not to be spread until after the snow has gone, but before planting time. This keeps the ground from drying out, and makes a good mulch. After lying for weeks, spread out, this is washed clean enough to draw to the plants when they need to be bleached, and does not cause rust like soil does in hot weather. This should be drawn to the plants when grown sufficiently, which starts them growing upright instead of spreading flat on the ground as some varieties do.

Now a word about varieties. The old White Plume, which we thought at one time could not be beat, seems to have gone out of favor. I grew a small quantity of it last year, and found the people would not buy it if they could get the Golden self-blanching, or Paris Golden. The latter does not grow as large, but may be planted much closer. The people want Paris Golden, so, obviously, that is the kind to grow. But for size and flavor there is nothing to equal the English Red. It also keeps better. Four of the seven rows I grew last year were of this kind, and for it I got the highest price.

I am afraid this paper is very incomplete, and that I have omitted much that might have been said, but if there is anyone who does not understand any part of it, or would like to ask any questions, I will do my best to answer them.

Buy Victory Bonds.

The potato crop of the United States is lighter than last year. Last year's December estimate was 442 million bushels. The estimate of Sept. 1, this year, is 384 millions. The average for five years was 361 million bushels.

GROWING TOMATOES IN ALBERTA

By the Publicity Branch of the C.P.R.
Service

The production of tomatoes in large quantities on the prairies does not appear to have been a success in the past, but prairie people are of a type who are forever doing something which was never done before. Messrs. G. O. Kerr and J. E. Terrill, of Lethbridge, Alberta, have observed for some years that tomatoes in small quantities were matured in the Lethbridge district and decided that there was no reason why the experiment should not be made on a commercial scale. As a result, about two acres of tomatoes were set out this summer on land farmed by Mr. Kerr, a few miles east of Lethbridge. The plants were started under glass in Lethbridge and set out on June 6, 7 and 8, at which time they were from 6 to 8 inches in height. Three thousand, five hundred plants were set in the plot, some of them three feet apart and some four feet apart. The experience of the season seems to indicate that the four-foot plan is preferable.

The soil secured was an old pasture which had since been in alfalfa and is protected by a wind break of trees on the western side. It is a very rich loam with a gentle south slope and, of course, is irrigated. The land was cultivated in the ordinary way and irrigated before planted and three times afterwards.

The first of the ripe fruits was available seven weeks after setting out the plants, or about the end of July. During the month of August from five to six hundred pounds of beautiful ripe fruit were taken off the plot each day and this rate of production continued into September. The total yield of the plot is estimated at 35,000 pounds and a ready market was found for the product in the city of Lethbridge, the early ripe tomatoes bringing twenty-five cents a pound and the latter crop fifteen cents a pound. The gross price of 35,000 pounds at the latter figure is \$5,250.

According to Mr. Kerr, no difficulties were experienced in the production of this crop. The vines were trimmed early in July for the purpose of producing heavier fruit and also admitting more sunshine, which ripened it very rapidly. The tomatoes are as large and as well developed as the best imported stock from British Columbia or Washington, and, being local grown, they, of course, reach the consumer in better condition. The

crop was so heavy that in many cases the support stakes which had been put in for the vines to climb on were broken down. One vine was noted which had eighty-three tomatoes on it.

Up to the time of writing (September 7) no damage has been experienced from frost, although as a precautionary measure flax straw had been dumped about the plot so that smudges could be started if necessary. Mr. Kerr points out that the essential thing in the production of this crop was the irrigation, which not only increased the amount of fruit but, by affording ample moisture at the right time, resulted in early ripening. Without irrigation it is doubtful if the experiment would have been at all successful, and while it is not suggested that every person can go into tomato raising in Southern Alberta and produce \$2,500 per acre, the experience in this case is at least instructive as to what these irrigated lands are capable of.

EVERBEARING STRAWBERRIES

By W. T. Macoun, Dominion Horticulturist

Interest in everbearing strawberries has increased very much during the past few years, and this has been brought about by the introduction of varieties which are much superior in some respects to those which were formerly available.

The first variety of these comparatively recent introductions which attracted attention is the Pan American, which was shown at the Pan American Exhibition in Buffalo in 1900. The parent plant was discovered by Mr. Samuel Cooper, of New York State, in the autumn of 1898, in a field of the Bismarck variety, his attention being drawn to it on account of its having fruit in the autumn. From this variety and through Mr. Cooper, several have been developed; among them are the Autumn, Productive, Superb, Peerless, Onward, Forward and Advance; but none of these have so far become as popular as those which have been originated by Mr. Harlow Rockhill, of Iowa, who used as one of the parents the Louis Gauthier, one of the best of the European everbearing sorts. Some of his varieties are crosses between it and the Pan American, although the Progressive, which has done best at Ottawa, is a cross between the Senator Dunlap and the Pan American. Some of the best of Mr. Rockhill's introductions are Progressive, Americus, Francis and Iowa.

The Minnesota Plant Breeding Station has done considerable work in breeding these everbearing varieties, and one of the best which has been introduced is the No. 1017.

The everbearing varieties differ from the ordinary sorts in that they usually continue blooming and bearing fruit from the time when the crop of the ordinary varieties are ripe until severe frosts in the autumn. Sometimes when there is a protracted drought in summer followed by warm wet weather in the autumn, the ordinary sorts will bloom and fruit a second time, but this is unusual.

Most of the varieties of everbearing strawberries are poor plant makers, and, on this account, the price of some of them has remained comparatively high. The Progressive and Americus, however, which are two of the best, make a fair number of runners. The fruit of these is medium in size, bright red in color, attractive in appearance, and of good to very good quality, the Americus being very good. The Superb has larger fruit and is also a good variety.

While there is often a good crop of fruit during late summer and autumn of these everbearing varieties, it is doubtful if they will be grown very generally commercially, as there are so many other fruits at that season of the year; but those who desire to have ripe strawberries for home use until late autumn will find these everbearing sorts produce in most seasons a fairly good crop of delicious berries.

The plants are set out early in the spring like the ordinary varieties, and there will be a crop in the autumn of the same year. It will be better if the first flowers are removed. The removal of the first bloom is not, however, necessary to ensure an autumn crop after the plants are well established.

War Garden Achievements

The 275 acres of waste land brought under cultivation by the Vacant Lots Cultivation Association of Toronto, in conjunction with the local Rotary Club, will yield no less than \$85,000 in produce this year, according to officials of the Association.

The vacant lots movement represents only one-fifth of the total gardening done in Toronto this summer. The total acreage under garden cultivation in Toronto is placed at 1,375 and the value of the produce raised this year will be about \$425,000. There are close to 10,000 gardens in the city.

PRESERVATION OF VEGETABLES BY FERMENTATION AND SALTING

From Circular No. 12 of the Women's
Institutes of Ontario

Although the preservation of vegetables by fermentation and salting are practical methods, still, little use has been made of them for some time, excepting in the preparation of sauerkraut and dill pickles.

Many other vegetables, however, lend themselves to this method of preservation; and while, perhaps, furnishing products quite different from the original substances, they are none the less wholesome.

One advantage that these methods possess is that containers which could not be used for canning may be used, such as old kegs, lard and butter tubs, stone crocks or jars, wide-mouthed glass jars, etc.—properly cleaned. Then, again, large quantities may be preserved in a short time with very little labor. The only inconvenience is the long soaking or long cooking required when preparing for table use.

General Principles of the Methods.

The methods group themselves under three heads:—

1. Fermentation with dry salting.
2. Fermentation in brine.
3. Salting without fermentation.

When vegetables are either packed dry with two or three pounds of salt to every hundred pounds of material, as in the making of sauerkraut, or are covered with a brine containing five pounds of salt to every twelve gallons of water, as in the preparation of dill pickles, the sugars present in the vegetables are extracted from them and are fermented by the lactic acid-forming bacteria, which are present naturally in great numbers on the surface of the fresh material. After this action has gone on to a certain point, enough of this lactic acid is formed to kill the bacteria and prevent any further change in the material, provided certain precautions are taken to prevent the growth of molds.

This lactic acid gives the product a peculiar flavor, but has no harmful effect. It is the same acid which is present in sour milk.

If the vegetables are covered with a very strong brine or are packed with a fairly large amount of salt, lactic acid fermentation, and also the growth of other forms of bacteria and molds are prevented. This method of preservation is especially applicable to those vegetables

which contain so little sugar that sufficient lactic acid cannot be formed by bacterial action to insure preservation of the material.

Fermentation by Dry Salting

This consists in packing the material with a small amount of salt; no water is added for the salt extracts the water from the vegetables and forms the brine.

Wash the vegetables, drain off the surplus water and weigh them.

For each hundred pounds of vegetables weigh out three pounds of salt.

Cover the bottom of the keg, crock, or other container, with a layer of the vegetables about one inch thick and sprinkle over this a little salt. Do not add too much salt to the first layers packed, but try to distribute it evenly, so that there will be some on the top layer. If more salt has to be added than the amount given the finished product will be too salty. Do not have the container more than three-quarters full. After sprinkling the salt on the top layer, spread over it one or two layers of cheesecloth, tucking it down at the sides. On the cloth place a round piece of board or a plate. Any kind of wood may be used for this board except yellow or pitch pine.

Over the board or plate place a clean stone or brick. For a five-gallon keg a weight of ten pounds will be sufficient. The weight serves to force the brine above the cover.

Allow the container to stand in a moderately warm room to ferment; usually 8 to 10 days is sufficient. When bubbles of gas cease to arise when the container is tapped, fermentation is complete.

The container should then be placed in a cellar or cool place and melted paraffin poured over the liquid until it forms a layer $\frac{1}{4}$ to $\frac{1}{2}$ inch thick. The paraffin prevents the formation of a scum on the surface of the brine. The scum, if allowed to form, would eventually destroy all the acid and the material would spoil.

Caution—Be sure that fermentation has ceased before pouring the melted paraffin over the brine, otherwise the formation of gas will break the seal.

Notes

1. Vegetables which may be successfully preserved by the above method of fermentation by dry salting are: Cabbage (sauerkraut), string beans, and beet tops.

2. In making sauerkraut, remove the outer green leaves of the cabbage and

the core. Shred with a slaw cutter or a sharp knife. Use salt in the proportion of 1 pound of salt to 40 pounds of cabbage—or $2\frac{1}{2}$ pounds salt to 100 pounds cabbage.

3. If desired, sauerkraut may be canned immediately after fermentation ceases by packing in sterilized jars, adjusting the rubbers, partially sealing and sterilizing for two hours in a hot water bath.

4. Beans should be young and tender and not overgrown. Remove the tip-ends and strings and cut into pieces about two inches long and pack as directed.

Salting Without Fermentation

In this method the vegetables are packed with enough salt to prevent fermentation or the growth of yeasts and molds.

Wash the vegetables, drain off the water, and then weigh them. For each 100 pounds of vegetables weigh out 25 pounds of salt, or the amount of salt used should be $\frac{1}{4}$ the weight of the vegetables.

Spread a layer of the vegetables about 1 inch deep in the bottom of a clean keg or crock and sprinkle heavily with salt. Continue adding layers of vegetables and salt until the container is nearly full, and then cover with the clean cloth, board and weight, as in the case of fermentation by dry salting. The keg should then be set aside in a cool place. If the salt and pressure of the weight have not extracted sufficient brine to cover the vegetables after 24 hours, prepare a strong brine by dissolving 1 pound of salt in 2 quarts of water and pour sufficient of it over the vegetables to cover the surface around the cover.

There will be some bubbling at first, but this will not continue long. Also soon as this stops, set the container where it will not be disturbed until ready for use. Seal by pouring very hot paraffin on the surface.

Notes

1. Beet tops, spinach, cabbage, string beans, green peas, and corn may be done by this method.

The string beans shall be cut in 2-inch pieces.

The peas should be shelled.

The cabbage should be shredded.

2. The corn should be cooked in boiling water for about 10 minutes to set the milk. Cut off the corn from the cob with a sharp knife. Weigh the corn and pack in layers with $\frac{1}{4}$ its weight of salt.

Fermentation in Brine

This method is used for cucumbers, string beans, green tomatoes, beets, and peas—vegetables which do not contain sufficient water for a good brine using only salt.

Wash the vegetables, drain off the surplus water, and pack them in a keg or crock until nearly full.

Pour over them a brine made by adding to every gallon of water $\frac{1}{2}$ pint of vinegar and $\frac{3}{4}$ cup of salt. The amount of brine needed will be about half the volume of the material to be fermented—that is if a 5-gallon keg is to be packed, $2\frac{1}{2}$ gallons of brine will be needed.

Set the container in a moderately warm room to ferment. When fermentation has ceased, place in a cool cellar where it will not be disturbed. If any scum has formed on top remove and seal with very hot paraffin.

Notes

1. For cucumbers—place a layer of dill and a handful of mixed spice in the bottom of the container, and also some over the top of the cucumbers.
2. Green tomatoes—should be packed whole and prepared as cucumbers, using the dill and spice if desired.
3. Beets—should be scrubbed thoroughly and packed whole without peeling. If peeled the beets lose color and flavor.
4. Peas—should be done in small containers, so that the quantity opened up will be used before it has a chance to spoil.

Preparation of Fermented and Salted Vegetables for the Table

Some fermented and salted vegetables, like cucumbers, are eaten raw; others, like cabbage, are usually cooked.

In general, the fermented and salted products may be prepared for the table in much the same manner as the fresh products, except that before being cooked they should be soaked in clear, cold water for several hours to remove the salt, with the water changed several times.

Sometimes it is necessary to change the water once or twice while cooking.

Fermented vegetables, after being rinsed thoroughly, may be cooked without soaking if a decidedly acid flavor is desired. They may, however, be soaked as salted vegetables.

Corn

To prepare the fermented or salted corn for the table, rinse it thoroughly and soak four or five hours, changing the water frequently. After soaking, place

the corn in cold water and bring to the boil, pour off the water, add fresh, cold water, bring to boil again and cook until tender.

String Beans

The salted string beans should be soaked to remove the salt and then cooked in any of the ways in which fresh beans are prepared.

The fermented string beans may be cooked without soaking and served as a vegetable or in a salad.

MARKETING OF MANITOBA POTATOES

By F. W. Brodrick, Professor of
Horticulture, Manitoba Agricultural
College

Considerable interest is being taken in the potato crop situation as the season for marketing the crop advances. A review of the situation would indicate that a larger area has been devoted to the production of this crop in Manitoba this year than in any previous year. Generally speaking, the seasonal conditions for this crop have been fair, although early drought held the crop in check. The condition has been corrected by late rains, and prospects are for a fairly good yield. The outlook in the Red River Valley has never been more promising than it is this year. A hurried survey of some of the fields immediately adjoining Winnipeg in the Municipalities of East and West Kildonan and St. Vital, show some indication of disease in the crop but not to an extent to materially lower the yield. With reasonable weather for the balance of the season, the province should harvest a good crop of potatoes.

With the prospects of a fair yield, growers are naturally interesting themselves in the question of marketing, and fearing over production, some growers are either selling the crop in the field or harvesting now and selling as new potatoes. With a proper system of grading and with proper distribution, there should be no need for growers to sell their crop at a sacrifice. From reports coming to hand, Alberta and Saskatchewan are both short of potatoes and will require Manitoba grown potatoes, while there will always be a good demand in the United States for properly graded seed potatoes. As Mr. Thomas Elliott pointed out at the Potato Conference last winter, it means a loss of money both to the grower and the dealer to handle ungraded potatoes. The recently amended

Dominion Fruit Marks Act now specifically fixes grades of potatoes and states:

"337A. (1) No person shall sell or offer for sale any potatoes represented to be of—

"(a) Number 1 quality unless such potatoes consist of specimens which are sound, of similar varietal characteristics, which are practically free from dirt or other foreign matter, frost injury, sunburn, second growth, cuts, scab, blight, dry rot and damage caused by disease, insects, or mechanical means. The minimum diameter of potatoes of the round varieties shall be one and seven-eighths inches, and of potatoes of the long varieties one and three-fourths inches. In order to allow for variations incident to commercial grading and handling, five per centum by weight of any lot may be under the prescribed size and, in addition, three per centum by weight of any such lot may be below the remaining requirements of this grade.

"(b) Number 2 quality unless such potatoes consist of specimens which are sound and practically free from dirt or other foreign matter, frost, injury, sunburn, second growth, cuts, scab, blight, dry rot and damage caused by disease, insects or mechanical means. The minimum diameter of potatoes of the round varieties shall be one and seven-eighths inches, and of potatoes of the long varieties one and three-fourths inches. In order to allow for variations incident to commercial grading and handling, five per centum by weight of any lot may be under the prescribed size and, in addition, three per centum by weight of any such lot may be below the remaining requirements of this grade.

"(2) This section shall not apply to seed potatoes.

"(3) 'Practically free' means that the appearance shall not be injured to an extent readily apparent upon casual examination, and that any damage from the causes aforesaid can be removed by the ordinary processes of paring without appreciable increase in waste over that which would occur if the potato were perfect. Loss of the outer skin (epidermis) only shall not be considered as an injury to the appearance.

"'Diameter' means the greatest dimension at right angles to the longitudinal axis.

"(4) Every person who, by himself or through the agency of any other person, violates any of the provisions of this

section shall be liable, upon summary conviction, for the first offence, to a fine not exceeding twenty-five dollars and not less than ten dollars; for the second offence, to a fine not exceeding fifty dollars, and not less than twenty-five dollars; and for the third and each subsequent offence, to a fine not exceeding two hundred dollars and not less than fifty dollars, together in all cases with the costs of prosecution; and in default of payment of such fine and costs shall be liable to imprisonment for any term not exceeding one month, unless such fine and costs, and the costs of enforcing them, are sooner paid."

Growers should endeavor to market their crops in carload lots as graded potatoes. Where one grower has not sufficient to fill a car, a number of growers should combine and dispose of their crop in carload lots. No doubt quantities of Manitoba potatoes could be disposed of in Saskatchewan and Alberta where the crop is short, by dealing through the local farmers or grain growers' organizations. The local dealers could no doubt dispose of large quantities of properly graded potatoes.

The prospects are good for the development of a potato industry in Manitoba, but only on the basis of:—

1. Reduction of varieties.
2. Use of disease free seed.
3. Selling in carload lots.
4. Proper grading as to size and variety.

HELPED TO SAVE FRUIT CROP

Some 2,000 young women recruited in British Columbia under the auspices of the Y.W.C.A. have proved a factor of very great importance in saving the fruit crop of British Columbia. Despite much suffering from mosquitoes, necessitating frequent relays, the patriotic fruit pickers remained at work, and had it not been for their help, a very considerable part of the crop would have been lost.

No more timely bulletin could be obtained right now than "Vegetable Storage." Write the Publications Branch, Dept. of Agriculture, Winnipeg, for a copy.

In Toronto the Vacant Lots Cultivation Association in 1916 plowed 300 gardens; the following year this number was increased to 826, while this year there are roughly 2,000 gardens under its direction.

GROWING SEED POTATOES

By E. R. James, Rosser, Man.

It is with a good deal of diffidence that I undertake this paper, knowing that there are many growers in this province who are more capable and have had greater experience than I have had.

It must be understood that the views expressed here are my views, and may or may not be correct, and I do not want anyone to adopt them, wholesale, until he has had an opportunity to test them out. I might also add that in speaking of them as my views, I do not in any way claim to have originated them. On the contrary, most of them are the result of hints gathered from my friends and from other sources and adapted to my own conditions.

The growing of seed potatoes must be divided into two, or, better, into three parts:

1. Growing hand selected tubers;
2. Multiplying the produce from your own seed;
3. Growing, finally, on a larger scale, for the market.

The three principal factors necessary for complete success are seed, soil and climatic conditions; and after years of experimenting I find it hard to decide which is the most important. Given good seed and poor soil with a bad season, the result is bound to be an inferior quality. Taking it, one year with another, I think perhaps that good seed, which can usually be got, and good soil, which can be produced, will to a great extent offset the average bad weather conditions of this province. To some extent, at any rate, weather conditions may be met if the soil is of good quality and properly worked. In this paper I am going to assume that the seed used is of good quality.

Soil

The first step, and important for one starting out to make the growing of seed potatoes a success, is to locate a suitable piece of land. For this country it should be well drained naturally, as, while I understand that tile draining will correct to a large extent the handicap of a poorly drained piece of land, still it is not practised much here as yet, and, personally, I have had no experience with it.

The soil should be not too heavy, nor yet too light, but if a good loam with a touch of grit in it can be obtained, so much the better. Too light land, while much easier to work, dries out quickly, and very heavy black soil, although re-

taining the moisture well, is often hard to work and does not turn out as bright, clean potatoes as the lighter soil, and, frequently, after a rain, at a time when cultivating should be done, it is not fit to work on. Plenty of suitable land, good in other respects, may be flat, although high, and after a heavy rain the water lies on it. I would prefer, therefore, a field with a gentle slope to the north or east. A slope in these directions is preferable to a southern exposure, as we frequently have hot, dry south winds that do much damage to potatoes at certain periods. Too steep a slope is not desirable, as after a rain the water will run off too quickly, without having time to penetrate, and besides losing the water, the loose soil is likely to be washed down hill, and channels, more or less deep, cut in the field.

After securing suitable land, it is necessary to get it in shape to produce a maximum crop with a minimum amount of labor. Labor conditions here are such that it is important for us to avoid, as much hand work as possible. For that reason I would advise locating your prospective potato land two years before you expect to crop it. I know this will meet with strong opposition and be deemed unnecessary, but I am supposing that the land is average land—not too clean, and probably worn a little, and if we are aiming to produce a maximum crop on land of that sort, the first year, with a minimum of labor, we might just as well stop right there. There is sure to be disappointment.

The plan I follow—and I find it works well—is to thoroughly manure, with fresh manure from the stable during the winter time. I do not keep track of how much is put on, but try to cover the land well. We usually do not have enough manure to go over the whole plot. In the spring, during May usually, when the land is fit to work on, the manured piece is thoroughly harrowed. This distributes the manure fairly evenly over the plot. It is then plowed as deeply as possible, which is frequently not so deep as one could wish, but if you go down half an inch more than the land was plowed before it will be sufficient at this time. Harrow at once, and afterwards as often as it is practicable. Soon there will be a good growth of young weeds, partly from self-sown seeds and partly from seeds in the green manure. These are what we are after, for if grown at this time, they will not grow the next year, and as the saving of hand labor is one of the objects

of this system, the more weeds that can be grown and destroyed the first year, by horse labor, the cleaner, and consequently the cheaper, the crop next year can be handled. As soon as the weeds get beyond the harrow stage, either cultivate, or, better still, plow the land again. If plowed, try and take up another extra half inch of soil. As soon as the plowing is done, follow with the harrow, to conserve moisture. Follow this up for the season. It is surprising how, after the first couple of plowings, the weeds become discouraged. Don't stop altogether, however, for there are always some seeds that have not germinated. Turn it over again, and don't forget to keep the harrow right after the plow.

If this is followed out for the season, the land should be in nice shape for a good crop. If the land is a little heavy or compact, you may have to go over it in the spring with a disc or even with the plow, but unless it is too hard to work up with the disc I would not plow it, as there is a chance that moisture may be lost if it comes very dry afterwards. Another thing to remember is not to touch the land with any implement at this or any other time, unless it is fit to be worked. Between the time the spring opens and planting time the land should not be left altogether alone, as there are sure to be some weeds ready to grow. A harrow should knock these out if they are caught in time, and there should not be many.

There is one important thing to be remembered in potato growing, so important that I consider it would be a good motto for all potato growers to adopt. This is it: "It is not a question of how little work we can put on the land, but how much we can do that pays well"; and my experience has been that you can't do too much work, if it is done at the proper time and the land is in a condition to be worked.

Seed

Before planting be sure you have the best seed you can get. The **best** is never too good, but by best I do not mean the

most expensive or the fancy priced new varieties.

Get a good standard variety that has done well in the district, and if growing for sale, a variety that has been well advertised by the seed merchants, and become popular; this will save you something in your own advertising.

My preference is for a good sized (not abnormal) tuber, smooth and free from knobs, if possible, that can be cut to a single eye and still leave a fairly large piece of the tuber to each eye, for the new plant to feed on until its roots are able to get into the soil. Seed potatoes that are firm, and have not sprouted are worth many times more for seed than those that have had two or three sets of sprouts knocked off them during the previous winter. The first sprouts are always the strongest and make the best plants. I find, in cutting to a single eye, you can plant

closer in the rows than otherwise would be practical, and the product will be more uniform in size. A whole potato will send up a stronger and more vigorous top and set a greater number of tubers, but when you come to compare the product of the single eye plant and that from the whole tuber, in the fall,

you will find that while the whole tuber may have produced a little more by weight and likely a good many more tubers, they are not so uniform, nor average as large as those from the single eye.

Look at it from another standpoint: If the product of a hill planted with a whole tuber is compared with from ten to fifteen hills set with single eyes, from a single tuber, the same size as the former one, I think a person will quickly come to the conclusion that from a given amount of seed the single eye set has them all beaten. When seed is scarce and expensive, the cost of production is reduced considerably by using the single eye set. Single eye sets, from good seed and planted in good soil, have been perfectly sure with me. Now and then, with some varieties, a person may plant a "blind" eye, but with the average variety there is not a great deal of danger

Four Months' Issue in One

During the past two months the Manitoba Horticulturist has fallen somewhat in arrears. We are trying, as best we may, to make up for this delay by sending out four months' issues all at once. The 32-page issue herewith contains as much matter as four issues of the usual size—8 pages for each month.

of this. I cannot see the object of planting larger sets myself, excepting that for a careless person they may be a little easier to cut.

Fresh cut seed has given me the best results. If it is impossible to plant, in one day, all the seed that has been cut, do not leave it in a pile or the sets will heat and a good many may not afterwards germinate.

In growing seed for my multiplying plots, I like to plant all sets from a single potato in a row by themselves, or, I might say consecutively in rows; with either a stake between the different lots, or what is more practical on a fairly large scale, a space of a yard or so. This is what is known as the "tuber-row" system. The potatoes can be carefully watched, and where one of the "families" (I do not know of a better word) shows any outstanding merit, the product of that family can be kept separate and marked at digging time. All potatoes grown under this system should be dug by hand, and the work must necessarily be done on a rather small scale. The families showing extra merit should be kept, each one by itself, and numbered or otherwise marked, and a record of its performance taken. The balance of the plot can be put together and the following year used in a multiplying plot.

In the tuber-row system, the potatoes must be planted by hand. I prefer cutting each potato, and planting the sets, before touching another; then going through the same operation with the next, and so on. It is the only method whereby you can be absolutely sure of the result. I use a small hand planter, and I can get through a good sized plot in a day, although it is relatively much slower than the ordinary system.

Culture

After the sets have been planted (I am speaking of the tuber-row system, which may cover a plot any size from a tenth of an acre up) and the young plants start to show up, I go over the plot with a Planet Jr. wheel hoe, and work it by hand in the same way that the larger plots are worked by horses. It takes very little time to run through the plot by hand if the soil is kept loose; and it must be kept loose to get the best results.

One-tenth of an acre is a very small plot, but with average care and proper weather conditions, it should produce sixty bushels of good potatoes, most of which should be available the following year for the multiplying plot. As ten or twelve bushels of seed should be sufficient

to plant an acre, you will have enough for a five-acre multiplying plot, if you wish to go into it as extensively as that. A plot that size would be better worked by machinery. Planters and diggers have been perfected so that they work admirably. I think, however, that a multiplying plot of an acre should be large enough for the average grower. Being smaller in size he would be able to give it more "special" attention, and given a fair show he should raise at least 400 bushels of good tubers, or enough seed for 30 or 40 acres the succeeding year.

This may look like "counting chickens before they are hatched," but my figures are very conservative, although they look large compared with the average for the province. It is simply a matter of seed, soil and attention; of course, helped by weather conditions.

Constant cultivation should be given until the potato tops meet and cover the ground. After that probably more damage would be done than benefit. The first cultivations should be fairly deep, gradually getting shallower as the tops grow. In cultivating, great care should be taken not to cut the small feeding roots which stretch out into the furrows, as a considerable setback is given to the plant if these are disturbed or broken.

Spraying

As soon as there is any sign of a potato bug, a thorough spraying with a paris green solution should be given. The sooner this is done, after the young bugs appear, the better. When young they are more easily killed, and the plants have not yet been damaged by them. The plants themselves are smaller and more easily covered with the solution. A second or third spraying is sometimes necessary, but no other work pays for the time better. I have tried one or two different solutions, but have found Paris green the handiest for all practical purposes. There are others recommended that I have not tried, and some of them are no doubt all right.

For small plots a watering can answers the purpose very well, but for a large area I think a sprayer drawn by a horse would soon pay for itself.

Harvesting

In harvesting the tuber-row plot, I have found that boxes are the handiest way to handle the seed to be saved for the next year's tuber-row plot. These boxes should be of uniform size, and large enough to hold the product of a "family." Each box should be numbered, and a record kept of the "family" number,

the field performance, the yield, the box number, quality of potato and any other particulars. For instance, if potato No. 10 showed evidence of being outstanding, the following year, if it was desired, each tuber of that family could be given a separate test and number 10A, 10B, etc. If any of the progeny of these showed extra merit, they would be the basis of a separate branch, and if the numbering had been properly kept track of it would be an easy matter to trace the ancestry. Of course, there is a limit to the practicalness of this work, and, while very interesting, a person must not let his interest in it run away with him.

This article is becoming unwieldy, and I am afraid there are many points I have not touched on, but I must not trespass further.

FOOD VALUE OF POTATOES

Canadians Who Eat Them Freely Can Help to Save Wheat Flour

People who wish to help in food conservation should consider potatoes as a partial substitute for wheat flour. Potatoes are the chief staple of the semi-perishable foods. Canadians do not eat their fair share of potatoes even in normal times. We have been largely a wheat, beef and pork consuming people. These staples are now required for overseas and it behooves us to substitute other foods for them whenever possible. We consume, perhaps, two and one-half bushels of potatoes per capita per year, or about one-third of a pound per day—equal to one fair-sized potato. In some European countries one pound per day per capita is consumed, and in some districts four pounds per day, and nearly twenty-five bushels per year.

Despite the increase in price since the war, potatoes are still among the cheapest of foods. One pound of roast beef costs ten times as much as a pound of potatoes, and twenty per cent of beef is bone. Three and a third pounds of potatoes supply 1,000 calories of energy, at a cost of less than 10 cents, while about 2,500 calories are required for full grown persons working indoors. That is to say, if all foods were as cheap as potatoes we could live on 25 cents a day. Healthy men have lived and worked for months on a diet of nothing else than potatoes, oleo-margarine and a little fruit. Potatoes contain protein of the very best kind. They also contain mineral salts which neutralize harmful acids in the body. The food material in potatoes is 98 per cent digestible.

NEEPAWA DISTRICT VEGETATION EXCELS

Splendid Showing is Made at Horti- cultural Society's Exhibition

The fifth annual exhibition and garden and grounds competition of the Beautiful Plains Horticultural Society, which was held at Neepawa on Friday and Saturday, August 16th and 17th, was a great success from the standpoint of number and quality of exhibits. The outlook earlier in the season had been very discouraging, due to the backward spring and the protracted season of drought. Later rains, however, gave surprising results in promoting a most satisfactory growth in practically all classes of vegetables and flowers.

The Society had done an excellent work in stimulating an interest among the citizens of the town in greater production by the establishment of a number of what are termed community "gardens." A quantity of vacant land was secured by the Society, was plowed and prepared for gardening purposes and turned over to a number of citizens on condition that it be planted and kept in good condition throughout the season. The results of the venture so far are most gratifying to the promoters.

The annual garden and ground competition has also done a great deal to stimulate a greater interest in improved home surroundings with the results that Neepawa and the district is rapidly becoming noted for its numerous attractive homes.

Among the principal prize winners at the exhibition were: Market Gardener's Collection Vegetables—A. Ashley and John Hamilton, of Kelwood. Individual Exhibits of Vegetables—Mrs. Nicholson. Cut Flowers—A. Ashley. House Plants—George Hooper, Mrs. McKell, Mrs. J. H. Howden, and Mrs. W. Montgomery.

In the garden and grounds competition the following awards were made: Best Home Ground—W. G. H. Robertson. Best Rural Grounds—Walter Brydon. Best Vegetable Garden—L. P. Parsons.

The officers of the Society are: President, John Wemyss; Vice-President, Mrs. J. H. Howden; Secretary-Treasurer, A. B. Fallis. Mr. George Harper, one of the directors; Mr. Palmiter and Mr. Fred Davis, M.P., did a great deal to make the exhibition a success.

The Canada Food Board has a free book of recipes showing how glucose may be used in place of sugar.

HERBACEOUS PERENNIAL FLOWERS

By A. P. Stevenson, Morden, Man.,
before the Annual Convention of
The Manitoba Horticultural
and Forestry Association

Every home should have a flower garden. It is needed just as much as the walks and the lawn, and no flower garden is complete without perennials; even although the piece of ground is a small one, considerable of the space should be devoted to this useful and varied class of plants. The garden should be near the house, and in sight of the rooms where we spend a good deal of our time, so the flowers may be seen from the windows.

Few flowers require as little attention as hardy herbaceous perennials if given the proper conditions to start with. Select a bright, sunny location, well drained, and if possible a reasonable distance away from trees, as trees are strong feeders, their roots reaching out much further than their height. The soil should be a good loam that will not bake, but any soil that will grow good potatoes will grow flowers. The ground should be plowed or spaded up in the fall if possible.

When planted most perennials should be left undisturbed for some time; in consequence the soil should be enriched with a liberal application of well-rotted manure. Select a southern aspect, if possible, and the plants will thrive and bloom better with some shelter from the cold winds. In this country planting is usually done in the spring, but some varieties, such as peonies, do equally well if planted in the fall.

In the making and planting of perennial borders, it is well to plant the kinds that will give a continuity of bloom from early summer until late fall, and arrange them so that they will give the best appearance. To accomplish this, the height of the plants and dates of blooming should be studied. It sometimes occurs in large borders that the best effects are obtained by massing a number of plants of the same color, but in small borders it is often not possible to do this. The low-growing varieties should be planted in the front, those somewhat taller behind, and so gradually further back until the tallest, such as Golden Glow and Delphinium, should be planted.

Do not let the weeds get ahead of you, or the ground bake hard. Use a narrow hoe, so that you can get into the small places.

Perennials are propagated by seed or

root division. Large numbers are easily grown from seed, such as Iceland and Oriental Poppies, Columbine, Coreopsis, Gaillardia, Campanula, Platycodon, Delphinium, etc. These can be had at small outlay and in two seasons many can be grown that will furnish bloom from early spring until late fall. A seed bed about four feet wide and as long as desired, of soil that will not bake, enclosed with six-inch boards, is a good place to grow young perennials. Sow the seed in rows about six inches apart across the bed. Fall is the best time to sow the seed; it will germinate better. If left until spring, the seed sometimes will lie in the ground a year before germinating. The depth to sow will depend on the seed; small seed requires to be nearly sown on the surface of the soil and pressed down slightly by hand; larger seed can be sown half an inch deep. Small seed, if sown deeply, will often not germinate at all.

The young plants, at the middle of the first season's growth, may be transplanted direct to the border, or pricked out about six inches apart into another bed and left growing there for the remainder of the season.

The dates of blooming, height of the plants and color of the flowers in the short list given below, may be of some assistance to those planting out a perennial border. There are now probably nearly one hundred varieties and species of herbaceous perennials that can be grown in this country; a large number of these are of interest to botanists only. But I will confine myself to describing the merits of a few that should be in the garden of every lover of flowers.

Achillea. The Pearl—Has double white flowers in clusters. One of the most useful of white flowered bedding plants, a profuse bloomer and quite hardy. Height, two to three feet. Blooms July to September.

Hollyhock (Althea)—Biennial. A beautiful old favorite which can be obtained in single and double flowers and in many colors. Should be planted in a well drained situation and have some protection in winter. This should not consist of stable manure, which often lies too close, and will rot the crowns. In extreme locations it is better to dig up the roots in autumn and winter in the cellar with the dahlia bulbs. Height, six to eight feet. Color, white to black. Blooms July to September.

Columbine (Aquilegia)—The columbines are lovely, graceful flowers, and, being nearly all natives of cold climates,

thrive well with us. Owing to the ease with which they hybridise, there are many improved varieties. On this account, it is difficult to get species true to name. The long spurred varieties are very desirable, and may be obtained in many colors by growing seedlings. Height, one to one and a half feet. Color, violet and white. Blooms June.

Canterberry Bell (*Campanula*)—Some of our best summer flowering perennials are to be found among the bell flowers. The large growing kinds are easily grown from seed. *Carpathica* is one of the best, but all require some protection in winter. Height, 15 inches. Color, bluish violet. Blooms July to September.

Larkspur (*Delphinium*)—This is a wonderfully showy class of old time perennial plants, which are well known and admired by everyone. The plants vary in form and in height. By preventing the flowers from going to seed, the season of flowering may be greatly prolonged. Height, three to five feet. Color, blue to white. Blooms July to August.

Bleeding Heart (*Dicentra Spec.*)—A well known and desirable variety, with flowers curiously formed; is fairly hardy, but is sometimes injured in severe winters unless protected. Height, two to three feet. Color, crimson and white. Blooms July to August.

Gas Plant (*Dictamnus Rub.*)—A choice variety, with lemon-scented flowers and foliage. Height, two to two and a half feet. Color, pale purple. Blooms June.

Blanket Plant (*Gaillardia Gran.*)—A genus of very ornamental and hardy plants. Flowers about two inches across on single stems, which makes them valuable for cutting. Height, two feet. Color, yellow to erimson. Blooms July to October.

Iris (*Fleur de Lis*)—There is no group of plants which afford more delight to the lover of a garden than the iris. In the species and variety of this beautiful plant may be found more shades of color than in any other genus of hardy flowers. Some varieties are very fragrant. For exposed locations the Japanese and Siberian varieties should be planted. Height, two to three feet. Color, bluish violet. Blooms June.

Peony (*Paeonie*)—Peonies are one of the most valued of all classes of garden flowering plants, and in many ways the rival of the rose for popular favor. The modern peony is a great advance over the old form, and includes a great variety of colors, styles of flowers and even variety of perfume. Some flowers are great masses

of petals whose gorgeous beauty attracts admiration. For best results peonies should be grown in full sunlight on rich, well drained land; they will not flower well in partial shade, and are propagated from seed for new varieties, and root division for named sorts, and as the plants eventually become very large and improve with age they should have plenty of room, at least four feet apart each way, and may be planted spring or fall. Are hardy everywhere.

Oriental Poppy—Flowers very large often five inches across; a most brilliant deep scarlet in color, with black centres. Foliage deeply cut and fern like. Height, three feet. Blooms June.

Phlox (*Perennial Phlox*)—This is a general garden favorite, and may be had in a variety of forms and colorings, and season of blooming. It is benefitted by light protection in severe winters. Height ranges from three and a half feet down to six inches; the low growing varieties bloom early in June, and the tall growing end of September. These are only a few of the varieties that are safe to plant in this country. Begin with these; then it is an easy matter to add to the list.

175 TOMATOES ON ONE PLANT

The following is taken from The North-End, Winnipeg, August 29th issue:

"Mr. John McNeil, corner Luxton and Scotia, has a back yard garden of tomatoes we think hard to beat. The writer counted 175 tomatoes on one plant Tuesday evening, and of these about 25 were ripe. The grower says he had previously picked several other tomatoes off the plant. Mr. McNeil has made a specialty of growing tomatoes, and this year's yield is wonderfully prolific. Many people from various sections of the city have visited his garden and complimented the grower on his great success. He grows his own plants from his own seed, and his efforts have been rewarded this year by a huge crop."

SAVE SEED CORN

Corn adapts itself to the locality in which grown. This makes it necessary that seed be saved from this corn instead of bringing in new seed. The best place to select the seed corn is the field, and it should be done early, so the selected seed can be hung up and at least partially dried before freezing weather, which will kill the germ in corn full of moisture.—Extension Div. Dakota Agricultural College.

IDENTIFYING POTATO DISEASES

**News Article Given to the Press by
Prof. V. W. Jackson, Manitoba
Agricultural College, on August 8th**

Paul E. Murphy, Federal Potato Disease Expert, and Professors Brodrick and Jackson, have just made a potato survey of the largest potato growers in Kildonan, St. Paul and St. Vital, Manitoba, and find that, although the crop is good, there is an unusual amount of Black Leg and Leaf Roll present which will reduce the yield and make many of the potato patches unsafe for seed unless these diseases are now culled out.

Now is the time to spot potato hills that carry hereditary diseases, and thus prevent the spread of these troubles by seed. In order of importance, these troubles are,—Leaf Roll, Black Leg, Wilt or Brown Ring, Rhizoctonia or Black Scurf and Leaf Mosaic.

Leaf Roll—In some fields and with some varieties 90 per cent. were affected with Leaf Roll and would, therefore not give over 50 bushels to the acre of poor and small potatoes. Attention was called to the seriousness of this trouble at the Potato Conference last March, a report of which appears in the last Manitoba Horticulturist. As these top troubles are only observable when the potatoes are in full leaf, they are overlooked when the potatoes are harvested

and are not associated with the poor yield, small size, and hereditary unfitness for seed. Now is the time to cull out all these hereditary troubles which so reduce the yield.

Leaf Roll, which reduces the crop one-half and passes on this hereditary unfitness by seed, may be spotted by:

A dwarfed plant of erect, stiff growth.

A yellowish or speckled tinge to the top leaves.

An upturning of the sides of the lower leaves.

A browning or speckling of the tips of these leaves which lie on the ground.

A thickening of these leaves so that they rattle when brushed and crackle when crushed.

A glossy thick look to the rolled leaves.

When stems are pulled out, there are usually small potatoes set close in on the stem.

They are "Small potatoes and few in a hill."

These carry this hereditary weakness.

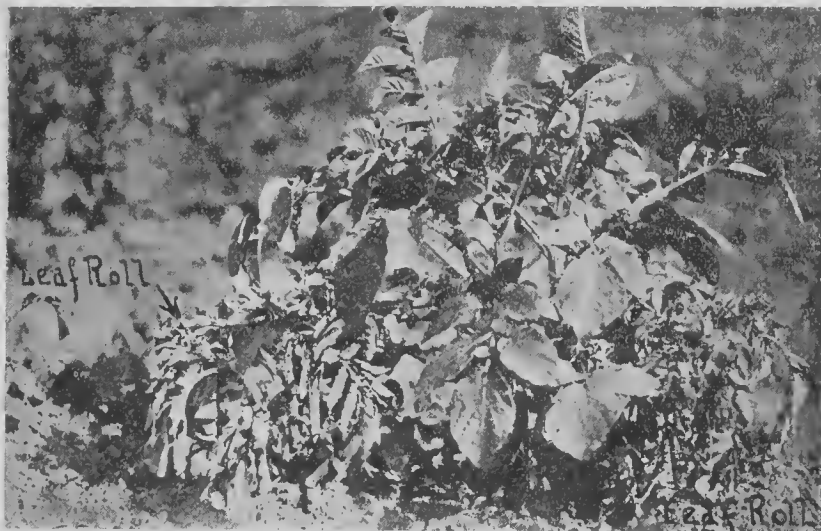
They can only be culled out of potatoes at this time of the year.

Hills with leaf roll should be pulled out and fed to the pigs as they are unmarketable and unsafe for seed.

Leaf roll is very common and easily spotted.

All varieties are susceptible to it by poor seed, and hot and dry conditions.

Irish Cobbler, Carman, Green Mountain



Healthy Plant with Leaf Roll on either side.



Some varieties roll badly; others are quite free. Often the difference is in the seed.

and Bovee do not show as much Leaf Roll as other varieties.

Get seed potatoes from districts free from Leaf Roll.

Kenora, Thunder Bay and Northern Manitoba are free from Leaf Roll.

Black Leg—Black Leg is much more common than usual this year, especially in the Early Bovee where the “misses” or empty hills indicate that Black Leg has killed the sprouts. Black Leg develops early, and, this year, continues beyond the blossoming period and may still be recognized by:

A general wilting, rolling and browning of the top.



Typical leaf roll with clustered tubers.



Leaf roll beside a healthy plant.

The stems often fall outward and flat on the ground.

These are rotted off by a soft bacterial rot.

These stems pull out of the ground easily and are soft and slimy at the base, and usually black; hence the name "Black Leg."

If the potatoes are cut open, many will show a slimy, hollow centre developing from the stem end.

These potatoes will rot completely, so that such a hill should be pulled out as soon as spotted and fed to the pigs.

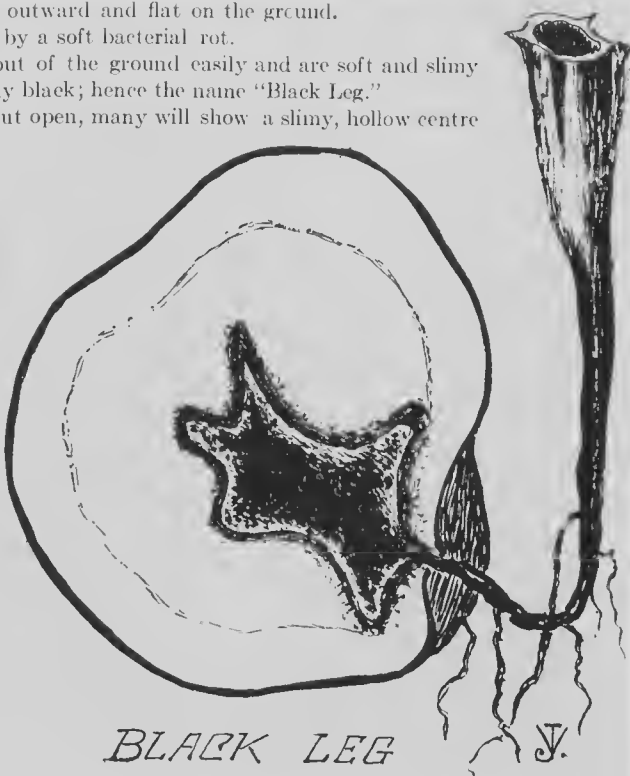
This disease is spread by seed.

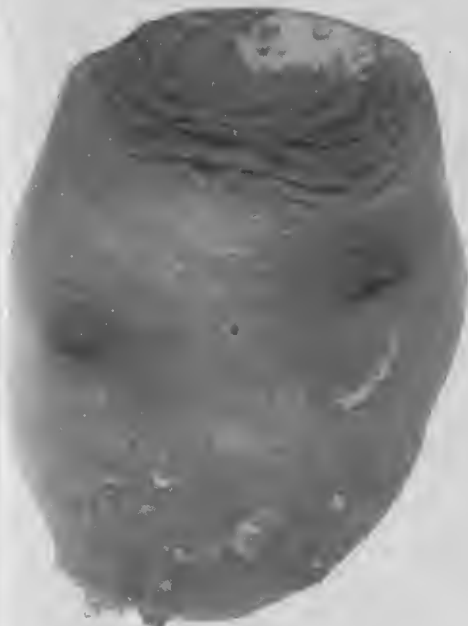
Formalin is found to check the spread.

Wilt or Brown Ring—*Fusarium* Wilt resembles Black Leg in affecting the whole top, but is distinguished from it by:

A bunching or rosetting of the top leaves.

A yellowing of the lower ones.





Dry rot due to a fusarium.

Stems pull out easily, are dry, brown and withered at the base, not slimy or soft.

On cutting these stems higher up, they show brown water tubes all the way up.

On cutting across the stem end of any potatoes on such stems, you will find a brown ring.

Although fit for cooking, such potatoes are unfit for seed as they spread the disease, and, as it is internal, no outer treatment with formalin will check it.

Rhizoctonia or Black Scurf—The disease which causes the little black spots on so many of our potatoes can, at this time of the year, be recognized in its entirety, and the damage estimated. The whole top goes vigorous and bushy. Stems turn purple at the top and potato apples often form. Aerial potatoes often form in the axils of basal leaves, and clusters of tiny potatoes form at the base of the stem. These are sure signs of Rhizoctonia, and due to the fact that this disease attacks the outside of the stem in the soil and prevents the downward flow of sap which then forces itself into extra leaves, and branches, and freakish potatoes above ground. As would be expected, the potatoes in such a hill are small and this disease is sometimes called "Little Potato" disease.

Leaf Mosaic—Although not so common

as the other potato diseases, some varieties of potatoes are very susceptible to Leaf Mosaic. It is recognized by a blistering or bulging of the surface of the leaves which have a mottled appearance. When these leaves are held up to the light, it is seen that the leaf green has a mottled or mosaic appearance, due to the attack of what is thought to be some bacterial organism. Like the other leaf diseases, it is hereditary and, therefore, spread by seed, and varieties showing a tendency to Leaf Mosaic should not be grown.

The production of maple sugar in the United States in 1918 is reported by the Dept. of Agriculture as 13,270,900 lbs. The production of maple syrup was 4,905,200 gallons, an increase of 3,432,250 lbs., over 30 per cent, and an increase of 619,100 gallons, or nearly 14.5 per cent, in syrup.

The United States War Trade Board has removed the restrictions recently placed on the movement of dried prunes and dried peaches in so far as Canada is concerned. Permits for importation of such products must be secured from the Canada Food Board.



Clusters of tubers formed at the surface of the ground after the parts below had been badly injured by rhizoctonia.



Typical Rhizoctonia, showing bushy top and potatoes clustered at surface of the ground.

MORDEN HORTICULTURAL EXHIBITION

By Prof. F. W. Brodrick

The third annual exhibition and home gardens contest of the Morden Horticultural Society, which was held at Morden on August 29th, was a distinct success. The exhibits of plants, cut flowers and vegetables were numerous and much above the average from the standpoint of quality. The exhibits of cut flowers were of particular merit, one grower having on exhibition a very large collection of named varieties of sweet peas, all of which were of good quality. The exhibit of vegetables, particularly the variety of tested potatoes put on by the local Experimental Station,

was worthy of special note, and gave some idea of the splendid work which is being done at this station.

The local Horticultural Society has done great work amongst its members in stimulating greater production, as indicated by the splendid exhibits of vegetables, and through its efforts Morden is rapidly becoming a noted horticultural centre.

The officers of the Society are: Dr. M. C. Rumball, President; E. D. Kirby, Secretary-Treasurer.

Some of those who won prizes in the various sections were:

Plants and Cut Flowers—W. J. Mellor, Mrs. A. W. Bowen, Dr. M. C. Rumball, Mrs. T. Cooper, Mrs. J. C. Dack, W. Conner, Jas. Andrew, C. C. Milne, and R. A. McIntosh.

Vegetables—W. Sweetney, J. E. Law, Dr. M. C. Rumball, J. C. McMahon, and T. McNaughton.

The first prize winner in the home gardens contest was Major C. F. Forrest, the second was J. Andrew. The first prize winner in the gardens of over

5,200 square feet was Fred Hall, and the second was E. D. Kirby. The first prize winner for a garden of 2,000 square feet was W. G. Sweetney, and F. A. Cowie. Best Flower Garden awards—First, W. Connor; second, J. Andrew.

Manitoba gardeners have large supplies of potatoes, carrots, cabbages, beets, onions and turnips, and by consuming these vegetables freely, they can economize with bread.

"Trees, Flowers and Fruits for Manitoba" is the title of a recently issued bulletin, written by Prof. Brodrick, of Manitoba Agricultural College. Secure a free copy by writing the Publications Branch, Department of Agriculture, Winnipeg.



Buy some Victory Bonds.

Don't forget that a lot of potatoes, not dug early enough, were froze in the ground last year.

A new bulletin on "Drying of Fruits and Vegetables" has been published by the Ontario Department of Agriculture, Toronto. The whole question is carefully covered.



A Green Mountain Potato affected with Mosaic. Photo by Murphy.



Spindly Sprout (on left) due to poor or small set.

HOME STORAGE OF VEGETABLES

By C. L. Fitch and J. H. Allison in
"Wisconsin Horticulture"

1. Potatoes are best stored in covered barrels or small bins. In crates or shallow piles they lose too much moisture and shrivel. They must not be stored in piles that are too large, because they heat and may keep poorly or sprout in the center of the pile. No potato should be more than four feet from air. Care should be taken to keep earth out of the potatoes, as much of it in any one place in the pile may prevent ventilation and cause heating and rotting. A few potatoes in a cold cellar are far more apt to freeze than those in a large pile.

Potatoes should be kept absolutely dark to prevent greening by light. Freezing destroys potatoes. No potatoes should be purchased for storage that are dug after the ground is crusted with frost, because it has proven impossible to sort out frosted potatoes. All those touched by frost will spoil, one after another. Do not buy potatoes in sacks that show wet places due to a frosted potato.

Potatoes and many other vegetables that require a storage room should not be too dry or too well ventilated. In some cases a damp earth floor or the sprinkling of the floor helps keep vegetables crisp. It is in this respect that pits excel.

2. Cabbage is not injured by moderate frost. Late varieties, perfectly sound and

not too ripe, are the only ones fit for storage. To wrap cabbages in paper and to leave on the outer leaves helps keep them crisp. For use after Christmas, most cabbage is best stored frozen solid in a pit. It will stand some freezing and thawing. For use after March, cabbage should be stored as kraut.

3. Onions need to be thoroughly cured when harvested. Dryness is a first requisite. They should be kept cold as well as dry. A well cured onion should be firm and not readily dented at the base of the tops by the tip of the thumb, when held in the hand. Onions are best for storage if topped about 1½ inches long. They will stand very little freezing-and-thawing, but are uninjured by being frozen solid once gradually if thawed out slowly. Seed onions are best stored frozen.

4. Beets, turnips, kohlrabi, winter radishes, carrots and rutabagas are best stored in sand in cellars or caves, or in pits; or in tightly covered boxes or crocks. The object is to keep them cold and to prevent evaporation. Kohlrabi must be tender when stored.

5. Squashes and pumpkins must be well ripened and cured. They must be free from bruises. They are best kept on shelves in a very dry place. They need not be kept specially cool.

6. Parsnips, parsley, vegetable oyster, horseradish, may be kept in the ground where grown all winter, but as too much freezing-and-thawing destroys them they should be covered lightly until severe weather and then uncovered to freeze solid and covered again. These vegetables may be stored as suggested in section 7, but the way to have them available all winter and to keep them crisp is to hold them frozen.

7. Celery, endive, head lettuce, may be rooted in earth in a cellar or cave, and with occasional watering may be kept until about Christmas time. Turnips, winter radishes and other vegetables mentioned in sections 4 and 6, also may be stored with the roots planted in sand or earth as above indicated.

8. Garlic should be thoroughly cured as are onions, or it may be braided by the tops into strings which are hung up in dry places for curing and storing.

9. Ground cherries, or husk tomatoes, may be stored for some weeks in the husk in thin layers in a dry place, free from frost.

10. Tomatoes may be kept until about November by bringing the well matured green tomatoes or the vines with

the tomatoes on, into the cellar or cave in the fall. Most of the tomatoes will ripen and be most acceptable as soon as they color up. The tomatoes may be placed on shelves or in boxes, and the vines may be hung up.

SELECTION AND WINTERING OF BIENNIAL VEGETABLES FOR SEED

By W. T. Macoun, Dominion Horticulturist, Ottawa

By the term "biennial" vegetable is meant one which takes two seasons to produce seed. The vegetable must be stored over the first winter and replanted, for seed production, the following spring. Some well-known vegetables of this class are beets, cabbage, carrots, celery, parsnips, salsify and turnips. Seed from these can easily be grown in Canada if the vegetables to be so used are kept in good condition over the winter. Some information on the selection and storing of roots and plants intended for seed production is herewith given.

Unless a rigid selection is made, each year, of specimens which are true to type it will not be long before a large proportion of the crop will be not true to type; hence great care should be taken to select well-shaped, medium-sized roots, typical of the variety, of beets, carrots, parsnips, salsify and turnips, firm-headed cabbage true to type, firm stalked and disease-resistant plants of celery, and firm, shapely onion bulbs. If this is done and varieties are kept far enough from others so that they will not cross, the crop from Canadian grown seed should compare favorably with imported seed in regard to purity, as it does in other characteristics.

The methods of wintering vegetables for seed will vary in different parts of Canada, but in most places it will be necessary to give them some protection. When possible, it is best to store them in a frost-proof cellar. But, if necessary, the vegetables may be stored outside, both in small and in large quantities, except in the case of onions, which must be kept dry, and stored in a cool place where there is little or no frost.

Cabbage—One of the simplest and most successful methods of wintering cabbage at Ottawa has been to place the plants side by side, heads up, in a trench or pit, the top of the heads being about six inches below the level of the ground, the trench being refilled with soil to the bottom of the heads. About a foot of straw is placed over the heads

and, when cold weather sets in, from six to eight inches of soil is put over the straw. Forest leaves, no doubt, would prove as satisfactory as straw. When winters are not very severe or where a heavy covering of snow is fairly sure, the cabbage may be simply heeled in with the heads above ground and the latter covered with leaves or straw just before severe frosts. There should be only a light covering at first to help prevent heating and rotting, and later a heavier application when the weather becomes cold.

Celery—Good results have been obtained at Ottawa by wintering celery for seed purposes as follows: The plants are set in a trench deep enough so that the tops of the celery come even with the surface of the ground. The plants are set close together in the row, but each row is separated by soil. Before severe frosts, the plants are covered with a heavy layer of straw and when cold weather sets in with about fifteen inches of soil. In 1917 nearly every plant came through the winter with the heart in good condition, which is all that is necessary to ensure good crops of seed.

Beets, Carrots, Parsnips, Salsify and Turnips—When harvesting, the tops are cut to within two inches of the end of the specimen, thus leaving the central shoot. This is better than cutting off the leaves close to the root. The pit in which good success has been obtained in wintering roots at Ottawa is made as follows: A hole is dug of the necessary dimensions, six inches deep, in a well-drained place. Poles are laid on the ground and covered with boards, leaving about five inches of air space under the flooring. A sink hole three feet deep is dug six feet away from the pit. An inverted trough-shaped pipe connecting this hole with the air space under the pit gives a chance for air circulation and drainage of any water that might soak in. The roots are put in bags to separate them better, though this is not always necessary, and piled three tiers high, running to a peak. A peaked roof of boards is put over the pit, high enough above the bags to allow about fifteen inches of straw to be packed in between; over the roof is put a light coat of straw and then fifteen inches of soil. A vent hole nine inches square is left in the centre of the roof. Before hard frost the sink hole is filled with straw and covered with boards and twelve inches of soil. The covering with soil should be deferred until cold weather sets in to avoid danger of heating, and during the winter the

temperature inside the pits should be taken if the pits are large. In many places parsnips may be left in the ground over winter and transplanted in the spring when better results will be obtained than if pitted, as they are very hardy.

GET A COPY

"Vegetable Storage" is the name of a free bulletin published by the Publications Branch, Manitoba Dept. of Agriculture, Winnipeg. The authors are Profs. Brodriek and Smith, Manitoba Agricultural College. The bulletin deals with winter vegetable storage, especially by use of farm store houses.

The Ontario potato crop is light. The weather from mid-July to mid-August was dry and hot, and some of the fields were ripened prematurely. Also there was considerable loss through disease.

SPLENDID HORTICULTURAL EXHIBITION AT SOURIS

This year's horticultural exhibition at Souris was most successful. The dates were Sept. 6th and 7th.

Mr. A. R. Ibbotson, secretary of the Souris Horticultural Society, writes: "We had a very successful show in every way, and it is very pleasing to note that our efforts are being rewarded by the public generally taking an increased interest in our show and organization."

The following is taken from the report in the Souris Plaindealer of Sept. 11th:

"The sixth annual horticultural exhibition held on Friday and Saturday last was an outstanding success in every way, in number of exhibits, in quality and in point of attendance. The exhibition had its inception in a comparatively small way in the fall of 1912, and has shown such wonderful growth, due mainly to the enthusiasm and hard work of the officers



The top half of this picture shows the exhibits in the Challenge Contest of 100 potatoes at the Souris Horticultural Exhibition. The exhibits were by the Souris Horticultural Society versus C.P.R. Men's Patriotic Garden Association. The bottom half of the picture shows part of the exhibit of flowers.

and the members generally, that the society is now acknowledged to be among, if not the most progressive of its class in the province. The show this year occupied both floors of the Hartney Building and every available foot of space was filled with vegetables, flowers, bees and honey. The bee and honey exhibits were features, and most interesting ones. A number of frames were sold by local apiarists. A. R. Ibbotson has this year sold 75 pounds of honey from one hive.

In the challenge contest between the Horticultural Society and the C.P.R. Gardening Association for the best display of 100 potatoes, the C.P.R. won by two points, 95-93, the possible score being 100. The competition created a great deal of interest, and the exhibits, sold by auction on Saturday evening netted almost \$50 for the Red Cross, the Horticultural Society exhibit selling nine times. The sale of a few other small exhibits brought the proceeds up to the amount mentioned.

The first prize celery, Mr. Walker, the judge, stated, was the best he had seen in Manitoba. The finest plate of potatoes, winning the sweepstakes prize, was the "Delaware" grown by Mr. Kingsmill, raised from one potato and selected each year for the past four years.

In the cottagers' gardens class the awards were:

Best kept garden and home surroundings—Frank Field.

Best cottage garden—A. R. Ibbotson, H. Hayes, J. Bridle, J. Barnes, J. Barlow.

DOMINION FORESTRY FARM AT SUTHERLAND, SASK.

The Dominion Government has two forestry farms in Western Canada—one at Indian Head and one at Sutherland, close to Saskatoon. The Sutherland farm is the more recently established, and has not been widely written up. This is what a contributor of one of the Regina daily papers had to say of the place this summer:

"One of the beauty spots of Saskatchewan which has scarcely been discovered yet is the forestry farm just out of Sutherland. One could spend hours there this season of the year and not see all there is to see. The broad gravel path leading up to the residence of the manager, Mr. McLean, is bordered with flowers and shrubbery, principally prairie roses. The roses have still a brave display of dark red blooms and bursting buds. The shrubbery is interspersed with triangles white with full flowering candytuft,

sprinkled here and there with a bunch of mauve or red.

"The edges of the drive are bordered in spots with California poppies that look as if they were made of sheer yellow silk. Small blue Colorado spruce trees squat among the luxuriant bushes.

"The lawns are Kentucky blue grass, shorn and clipped until they are as level as a dancing pavilion.

"Mr. McLean's flower garden is the wonder spot of the forestry farm. It includes great patches of bridal wreath and spots of squirrelly frivolous green which the gardener said was baby's breath. Two patches of phlox are so red against their brilliant green leaves that they hurt one's eyes. And against the uproariousness of the atmosphere caused by the color of the phlox, a modest cream and lemon columbine holds up its pretty head.

"The space is not all given over to flowers. Rows of asparagus, cabbages and strawberries flank the flower garden.

"The rest of the 160 acres of the forestry farm is practically given over to trees. Last year one and a half million trees were shipped from the farm to farmers in the province. Two years ago three million were shipped out. The trees are taken up in the fall and set out in the spring."

Prepare now to raise a bigger crop of vegetables than ever next year. No matter whether the war is over or not, they will all be needed.

Good cooks know the ways of using potatoes are various — boiled, steamed, lyonnaised, baked, chipped, fried, hashed brown, creamed, scalloped, stuffed, au gratin, and scores of combinations.

More than 200 ways of cooking potatoes are known. They combine well with many flavors. They can be used to economical advantage with meat and fish, in stews, croquettes, hash, chowders, meat pies, etc. One half a cup of mashed potatoes and two cups of flour make a bread mixture that helps the flour go farther.

Housewives who wish to aid in food conservation may secure at 5 cents each the following recipe booklets issued by the Canada Food Board, the Winnipeg address is 205 Scott Block: No. 1—"Fruit and Vegetables, Canning, Drying, Storing." No. 2—"Canadian Fish and How to Cook Them." No. 3—"Vegetable Recipes." No. 4—"Bread Recipes."

POTATO FLOUR

By Prof. V. W. Jackson, Manitoba
Agricultural College

^ Little Japan, who did not know what potatoes were at the beginning of this war, is now growing 35,000,000 bushels, or four times the Manitoba crop, and last year shipped 400,000 lbs. of potato flour to the United States, where the average selling price was 12c per lb. In 1913 Germany produced 1 $\frac{3}{4}$ billion bushels of potatoes, one half of which was converted into potato flour or starch to make it imperishable and, therefore, marketable. In this way the plenty of one year can be stored up for another or future years, and, no doubt, these vast reserves have enabled Germany to withstand the blockade. \$300,000 worth of this potato flour was sent in 1913 to the United States where it was used to make bread, for thickening soups and for making fancy pastries. Japan, seeing that this supply was cut off, stepped into the breach and is doing what we should have been doing, or even the States itself which, however, only grows one-fifth as many potatoes as Germany.

One factory in little Holland dries 33,000 bushels of potatoes every twenty-four hours. A special variety is grown which yields 500 bushels per acre. 137 lbs. of potatoes make 25 lbs. of potato flour, and at a cost of 3 $\frac{1}{4}$ c per lb. From this special variety of potato, Holland made 346,000,000 lbs. of first grade flour last year at a cost of \$70 per ton, so it is apparent that we are not handling potatoes as we might, or they would not be sacrificed at 25c per bushel when potato flour is selling at 12c per lb., and can be manufactured at a cost of 3 $\frac{1}{4}$ c per lb., although it is claimed that it would cost 8c per lb. to dry potatoes in this country. But surely what Holland and Japan can do, we can do. There are now six plants in the United States making natural potato flour. In 1917, 6,000,000 bushels of potatoes were dehydrated into natural potato flour, which is better than the German or Japanese product which is simply starch as the result of cutting the potatoes into small pieces, washing out the starch into settling basins and then dehydrating it. The American natural flour is really the ground, baked potato. The potatoes are washed, boiled in the skins, which are then ground off, and the potato dehydrated under vacuum and ground and bolted until the proper fineness. Such flour is more nutritious

than wheat flour, as it contains seven times as much mineral salt and four times as much fat as wheat flour, as will be seen in the following analyses given by Dr. le Clerc, of the Department of Agriculture:

	Moisture	Ash	Fat	Protein	Carbohydrates
	p.c.	p.c.	p.c.	p.c.	p.c.
Wheat	12 $\frac{1}{2}$.5	.1	11	75.5
Potato	7	3.5	.4	9	80.1

A ton of potatoes will make 425 lbs. of natural potato flour, whereas it would make only 225 lbs. of starch. The Americans, therefore, have the right method, if they can only cheapen it, and the new requirement for war bread will no doubt go a long way to force us to be less negligent, and we may achieve during the war what we otherwise would have left undone.

Some enterprising business man or co-operative association ought to get busy on the potato problem of Manitoba, and try to save the crop we have and make it possible for the farmer to grow the potatoes he would like to grow, for the climate and the soil are pre-eminently suitable, and it would make a valuable addition to our monotonous wheat growing, and save the loss due to summerfallow, for a crop of potatoes is always reckoned as equal to a fallowing of the soil.

MANITOBA HORTICULTURAL AND FORESTRY ASSOCIATION

Incorporated Under Act of Manitoba
Legislature

Life membership, \$10.00. Annual membership, \$1.00 per year. Special 25 cent rate to members of Affiliated Horticultural Societies at Local Points in Manitoba.

Officers for 1917:

Honorary Presidents—S. A. Bedford, Department of Agriculture, Winnipeg; President J. B. Reynolds, Manitoba Agricultural College, Winnipeg; Angus Mackay, Indian Head, Sask.

President—George Batho, 406 Maryland St., Winnipeg.

First Vice-Pres.—H. W. Watson, 205 Walnut St., Winnipeg.

Second Vice-Pres.—W. J. Boughen, Valley River, Man.

Directors—A. P. Stevenson, Morden; Norman M. Ross, Indian Head, Sask.; F. L. Skinner, Dropmore; and following all of Winnipeg, Mrs. H. M. Speechly, George Barratt, W. G. Scott, Jas. Cocks, S. G. Simpson, W. J. Harrison, Henry Downing.

Secretary-Treasurer—Prof. F. W. Brodrick, Manitoba Agricultural College, Winnipeg.

ALL ARE INVITED TO JOIN

MANITOBA HORTICULTURIST

Devoted to the better growing of Trees, Fruits, Vegetables and Flowers in Manitoba
Published by The Manitoba Horticultural and Forestry Association

Vol. V.

WINNIPEG, CANADA, DECEMBER, 1918

No. 12

THE COMING ANNUAL MEETING

So far as can be forecasted at present, the 1919 annual meeting of the Manitoba Horticultural and Forestry Association will be a very attractive one. While it is still too early to announce definitely who will be on the program, it is not too early to say that the Program Committee is in hopes of having a strong line-up, both of local talent and of notable horticulturists from outside Manitoba.

At the Thursday morning session the vegetable growers will be to the front. The plan of having a special session for the vegetable growers has now been followed for about four or five years, and on every occasion the addresses have been of a high order. The stimulation to vegetable growing created by the war seems likely to continue throughout at least one or two years to come, and it is a rare privilege of amateur growers to gather and listen to the best that the professionals have to give. Indeed, it is a privilege much appreciated by the professional market gardeners themselves,

and the Association is happy to have them use its convention in this way.

The session with Home Economics Society delegates has grown in interest from year to year, and is delightful from every standpoint. Many of our Manitoba women are first-class horticulturists, and delegates to both conventions enjoy this session.

If the plans of the Directors for the Thursday evening session mature, this will be a unique affair, that will be particularly enjoyable, especially to the "old-timers."

Last year the potato conference was a decided success, and a large number of the Agricultural Society delegates were very sorry to have to miss it. This year potato growing is to be the theme at the joint conference. The potato industry is an exceedingly interesting one just now. Such problems as potato diseases, potato markets and potato cultivation will be dealt with by experts.

The Friday afternoon session promises to be very full. So far as is now known, fruit growing and the most important

Preliminary Notice of the

ANNUAL MEETING

of the

MANITOBA HORTICULTURAL AND FORESTRY ASSOCIATION

to be held in

Winnipeg, Thursday and Friday, February 20 and 21, 1919

The Directors of the Association have fixed the dates for the Annual Convention as above indicated. It is expected that the sessions will be arranged as follows:

Thursday Morning—Vegetable Growers' Session.

Thursday Afternoon—Joint meeting with the Convention of the Home Economics Society.

Thursday Evening—Banquet, succeeded by an open meeting, with special program.

Friday Morning—Joint session with the Convention of the Agricultural Societies, making this a Potato Conference.

Friday Afternoon—General Meeting.

Friday Evening—General Meeting.

Invitations have been sent to eminent Horticulturists from outside places, and a strong program seems assured.

GEORGE BATHO, President

F. W. BRODRICK, Secretary.

planning for the year's work will come in here.

The illustrated addresses on popular and educative phases of horticulture, which from year to year have been reserved for the Friday evening meeting, have always been a delight, and it is hoped that this year will see the high order maintained.

Lay your plans now to attend the convention.

CAN MANITOBA GROW POTATOES FOR POTATO FLOUR MANUFACTURE?

The Western Canada Development Bureau of the Winnipeg Board of Trade has invited the co-operation of the Canadian Council of Agriculture in undertaking an investigation of the practicability of introducing into Western Canada two manufacturing industries closely related to the interests of agriculture, namely:

The manufacture of potato flour; the manufacture of fibre from hemp.

In extending this invitation the following statement covering certain broad general facts relating to potato flour is given:

1. At the commencement of the war Germany had some 400 potato flour mills, and according to consular reports the number had been increased to about 2,500 by 1917.

In 1913 Germany produced 1,988,591,000 bushels of potatoes, as against a combined production by Austria, France, Belgium, Great Britain and the United States of 1,656,811,000 bushels. Germany's average production is 220 bushels per acre as against 95 bushels in the United States.

2. Before the war, Germany supplied to the United States 90 per cent of their potato flour, Japan 5 per cent and Holland 5 per cent. The total imports of the United States amounted to 75,000,000 lbs., valued at \$7,500,000. The reason given for this amount not being larger is that a larger amount was not available.

3. In facing after war problems the United States recognized the advisability of entering into this industry on an extensive scale, and promptly took action to do so.

4. One of the objects of the United States in taking this step, apart from that of manufacturing their own potato flour, was to provide a market for the lower grades of potatoes. These are used

for the manufacture of potato flour, starch, stock food and other by-products. Large quantities of alcohol are manufactured out of potatoes in European countries.

5. In 1917 the potato crop of the United States totalled 442,000,000 bushels. Of this amount approximately 52 per cent never reached the consumer, representing a loss to the United States at 50c per bushel, of \$112,500,000, the reason being the lack of a market.

6. The magnitude of the development the United States has in contemplation for the production of potatoes for the manufacture of potato flour, starch, stock food, alcohol, etc., can be better understood when it is pointed out that notwithstanding the great waste of the 1917 crop the slogan of the United States to-day is "One Million Bushels of Potatoes."

7. To date there are four potato flour mills already completed, several more are in course of construction, and there is every prospect of this number being increased to 50 or 75 within twelve months.

8. The establishment of the industry results in a large number of small mills being located in different parts of the country instead of a few large mills in certain centres. This keeps labor in the country all the year round, and would make an ideal industry for the Western provinces.

9. The development of potato-growing on an extensive scale would be of enormous advantage in providing a hoed crop in place of summer-fallow. A cultivated crop will produce a profit instead of involving an out-of-pocket loss as does summerfallow.

10. A potato flour plant with a capacity of 600 bushels a day, operating 24 hours, costs, including the building, approximately \$25,000, and storage facilities for five months approximately \$7,000.

11. The establishment of this industry on an adequate scale would provide a stable market for potatoes.

Potato flour can be used in the manufacture of bread to the extent of 25 per cent. It is also extensively used in the packing and other industries.

The members of the bureau have not reached any opinion as to whether all the conditions in Western Canada are or are not such as to ensure the success of potato flour mills here. It is their opinion, however, that on such facts as are at the moment obtainable the matter is deserving of a prompt and thorough considera-

Manitoba Horticulturist

406 Maryland St., Winnipeg.

A Monthly Periodical on Horticulture and Forestry in Manitoba.

Supplied free to all Members of the Manitoba Horticultural and Forestry Association.

Membership in the Association (including free subscription to this Journal) \$1.00 per year.

Editor.—George Batho, 406 Maryland Street, Winnipeg.

tion at the hands of the commercial and farming interests of the west.

Some of the points respecting the potato flour industry which would require investigation are the following:

(a) The different areas within which potatoes could be most successfully grown.

(b) The possibilities of storage over the winter months.

(c) The cost of manufacturing potato flour, starch, stock feed, alcohol and by-products.

(d) The relative values of wheat flour and potato flour to the baker. The price at which potato flour could be sold in relation to the price paid for potatoes.

(e) The highest price at which potato flour would be saleable when wheat flour is again selling at normal prices, and what price this would enable the manufacturers to pay for potatoes.

(f) The extent of the market for potato flour, starch, stock food, alcohol and by-products and the probable selling prices.

MANITOBA VEGETABLES AT DRY FARMED PRODUCTS EXPOSITION

Did you know that Manitoba could beat all the rest of North America in vegetable growing? Well, that is just what we were able to do at the International Dry Farmed Products Exposition at Kansas City, Mo., this fall. The first prize for collection of vegetables shown by any state or province fell to Manitoba. Below are the prizes Manitoba secured in vegetables at Kansas City. Of course, we secured many prizes in other products; these are the vegetable prizes only:—

State Prizes

Province of Manitoba—1st state or provincial prize for collection of vegetables.

County Prizes

Kildonan Agricultural Society—1st

county prize for collection vegetables. Sweepstakes vegetables.

Individual Exhibitors' Prizes

S. Lareombe, Birtle—3rd, early Ohio potatoes; 1st, carrots; 3rd, parsnips; 3rd, red onions; 2nd, table beets; 2nd, Burbank potatoes; 2nd, white pearl.

Magnus Harper, R.R. 1, Winnipeg—3rd, beans, any variety.

C. W. Noton and Son, Boissevain—1st, potato, any other variety.

H. C. Whellans, Kildonan—3rd, celery; 1st, cabbage; 3rd, garlic; 3rd, table beets; 2nd, red mangels; 1st, sugar mangels.

J. P. McDonald, Kildonan—1st, table beets; 1st, swede turnips; 2nd, parsnips.

D. Melvor, Kildonan—2nd, carrots; 2nd, swede turnips; 1st, parsnips.

F. W. Hack, Grand Vital—2nd, white onions; 3rd, yellow onions; 2nd, cabbage.

Thos. Knowles, Emerson—3rd, swede turnips.

Rev. Rumball, Morden—2nd, sugar mangels; 3rd, red mangels.

Klas de Yong, Kildonan—3rd, sugar mangels; 2nd, beans.

RECOMMENDED LIST OF BOOKS AND BULLETINS ON HORTICULTURE

A need has been felt for some time for a selected list of books suitable for the gardener and plant lover. With that object in view, the following list has been prepared. These are recommended as desirable books, to be purchased and kept in the gardener's library for reference purposes. In this classification the subjects of horticultural value have been divided under a number of sub-headings, and the books and bulletins referred to under each sub-heading apply particularly to that division of the subject. It is to be hoped that this list will be found of value as a guide in the purchase of horticultural books.

Fruit Growing

Books—

"*Popular Fruit Growing*," by Samuel B. Green, published by The Webb Publishing Company, St. Paul. Price \$1.00. A book of three hundred pages devoted to the various phases of fruit culture, viz.: Soils, propagation of nursery stock, tree planting, cultivation, varieties and marketing. A good book for the farmer who is interested in the growing of fruits in

a small way, as well as for the agricultural student.

"American Horticultural Manual," by Prof. J. L. Budd, assisted by Prof. N. E. Hansen, published by John Wiley & Son, New York, 1901. Price \$3.00.

An excellent text in two volumes. Volume one deals with the various phases of horticultural practice, and also with the culture of the leading hardy fruits. Volume two is a systematically classified descriptive list of the known varieties of hardy fruits. These books will be found valuable to the amateur fruit grower, and particularly valuable to the student.

"Bush Fruits," by Fred W. Card, published by the MacMillan Company, Toronto. Price \$2.00.

This book deals very fully with the culture of the various bramble and bush fruits, such as raspberries, blackberries, currants and gooseberries. A useful reference book for the grower of small fruits.

"Strawberry Growing," by Prof. S. W. Fletcher, published by MacMillan & Company, Toronto. Price \$1.75.

A complete treatise outlining the essentials to success in the growing of this very desirable fruit. Useful to the amateur and to the student.

BULLETINS—

"Trees, Fruit and Flowers for Manitoba," by F. W. Brodriek, B.S.A., Manitoba Agricultural College. Free.

"The Apple in Canada; Its Cultivation and Improvement," by W. T. Macoun, Central Experimental Farm, Ottawa. Free.

"Bush Fruits," with a List of Varieties found most useful. Bulletin No. 56, by Prof. W. T. Macoun, Ottawa. Free.

Vegetable Growing

BOOKS—

"Vegetable Gardening," by Samuel B. Green, published by the Webb Publishing Company, St. Paul, Minn. Price \$1.00. A carefully written book dealing with the various phases of vegetable growing, such as soil, manures, vegetable seeds, sowing, transplanting, cultivation and varieties. A useful book for the market and amateur gardener.

"Productive Vegetable Gardening," by John W. Lloyd, M.S.A., Prof. of Olericulture, University of Illinois, published by J. B. Lippincott, Philadelphia, Pa. Price \$1.50.

A comprehensive, well-written book, dealing in a systematic way with the various branches of vegetable growing. A useful book for the market gardener and the student.

"Garden Farming," by Lee Cleveland

Corbett, Bureau of Plant Industry, U.S. Dept. of Agri., published by Ginn & Co., New York and Chicago. Price \$2.00.

Like the preceding, this book deals with the general principles of vegetable growing, together with a systematic discussion of the various vegetable crops.

BULLETINS—

"The Farm Garden," M.A.C. Bulletin No. 5, by F. W. Brodriek, B.S.A., Manitoba Agricultural College, Winnipeg. Free.

"Garden-Making on Vacant Lots, and the Home Vegetable Garden," Circular No. 13, Dom. of Canada Dept. of Agri., Experimental Farms Branch, Ottawa, by W. T. Macoun. Free.

"Vegetable Gardening," by S. C. Johnston, B.S.A., Vegetable Specialist, Ontario Dept. of Agri., Toronto, Ont. Free.

"The Potato," Manitoba Dept. of Agriculture, Winnipeg. Free.

"The Potato in Canada," by W. T. Macoun, Bulletin No. 90, Dom. of Canada Dept. of Agri., Experimental Farms Branch, Ottawa. Free.

"Potatoes," by C. A. Zavitz, Ontario Agri. College, Guelph, Ont. Free.

Farm Forestry

BOOKS—

"Forestry in Minnesota," by Samuel B. Green, published by the Pioneer Press Company, St. Paul, Minn.

A book prepared for the forester and farm tree planter. An outline is given of the methods of growing trees from seed, transplanting, the care of forest and farm wood lots, the physical properties of wood, and the sylvicultural properties of a number of our leading forest trees.

"Principles of American Forestry," by Samuel B. Green, published by Wiley & Son, New York. Price \$1.50.

A revision of the preceding book with additions, and with an abbreviated and more concise sylvicultural list. This book would also be found useful by the tree grower, and possibly a little better suited to the needs of the student in farm forestry than the preceding.

BULLETINS—

"Tree Planting on the Prairies," by Norman M. Ross, Chief of Tree Planting Division, Indian Head, Sask. Bulletin No. 1, Forestry Branch, Department of Interior, Ottawa. Free.

Landscape Gardening

BOOKS—

"Landscape Gardening as Applied to Home Decoration," second edition, revised and rewritten, by Samuel T. Maynard, published by John Wiley & Son, New York. Price \$1.50.

Contains information that would be of direct value to anyone desirous of making home surroundings more attractive.

"*Landscape Gardening*," by Edward Kemp, edited, revised and adapted to North America by F. A. Waugh, Prof. of Landscape Gardening, Mass. Agri. College, published by John Wiley & Sons, New York. Price \$1.50.

An English book adapted to American conditions by a reliable authority on the subject. This book gives more of what might be termed the general principles of the subject, and might be used to advantage by the student in co-operation with the foregoing.

BULLETINS—

"*Trees, Fruits and Flowers for Manitoba*," by F. W. Brodrick, B.S.A., Manitoba Agri. College, Ext. Bulletin No. 29, Manitoba Dept. of Agriculture. Free.

"*Planning a Prairie Farmstead*," by Norman M. Ross, Chief of Tree Planting Division, Indian Head, Sask. Forestry Branch, Ottawa. Free.

"*List of Herbaceous Perennials*," by W. T. Macoun, Bulletin No. 5, Second Series, Government Printing Bureau, Ottawa. Free.

Floriculture

BOOKS—

"*Home Floriculture*," by Eben E. Rexford, published by Orange Judd Company, New York. Price \$1.00.

This book contains practical suggestions of value to the grower of plants, both in the house and in the garden.

"*The Principles of Floriculture*," by Prof. Edward A. White, published by MacMillan & Company. Price \$1.75. A well written work on the principles of flower growing, of value to the commercial florist and to the agricultural student.

Horticultural Books in Winnipeg Public Library

With a view to increasing the interest in horticulture in Winnipeg and the vicinity, the Executive of the Manitoba Horticultural and Forestry Association have requested the City Librarian to prepare a list of horticultural books in the Winnipeg City Library. It is felt that with the increased interest in gardening there will be a growing demand for fuller information on many phases of this subject, and that these books will be called for and read.

The list so kindly supplied deals with practically all phases of the subject. The list is so comprehensive that it is difficult to make specific reference to many of the books. Included in the list are a number of valuable references on horticulture.

The *Cyclopedia of American Horticulture*, by L. H. Bailey, is particularly valuable as a reference.

The volumes on Trees, Fruits and Flowers of Minnesota, which are really the reports of the Minnesota State Horticultural Society, will be found interesting to Manitoba readers.

The books edited by L. H. Bailey, and included under the Rural Science Series, will be found instructive to horticultural readers.

Included in the list are a number of books dealing with subjects related to horticulture, such as destructive insects and their control, and the methods of controlling injurious plant diseases.

A number of the better known books in the list have been marked with a star, but, undoubtedly, included in the list are many others that would be interesting and instructive. The list is as follows:

1. Cadbury, George—"Town Planning," with special reference to the Birmingham schemes (reference).
2. Geddes, Patrick—"Cities in Evolution," an introduction to the town-planning movement and to the study of civics.
3. Koester, Frank—"Modern City Planning and Maintenance."
- * 4.—"National Conference on City Planning. Proceedings: Washington, 1909; Rochester, 1910 (reference only); Philadelphia, 1911; Boston, 1912; Toronto, 1914.
5. Marsh, Ben. C.—"Introduction to City Planning."
6. Perkins, Dorothy—"Canadian Garden Book."
7. Purdom, C.B.—"Garden City—Study in the Development of a Modern Town."
8. Robinson, C. M.—"Modern Civic Art," or "The City Made Beautiful."
9. Webster, Angus D.—"Town Planning and the Trees, Shrubs, Herbaceous and Other Plants that are Best Adapted for Resisting Smoke."
10. Davidson, K. L.—"Gardens Past and Present."
- * 11. Fernow, B. F.—"Care of Trees in Lawn, Street and Park."
12. McCollum, W. C.—"Vines and How to Grow Them."
13. Phillpotts, Eden—"My Shrubs."
14. Adams, H. S.—"Flower Gardening."
15. Albee, Helen R.—"Hardy Plants for Cottage Gardens."
16.—"Among the Flowers."
17. Arnott, S. and Brotherson, R.P.—"Gardening in the North."
- * 18. "*Cyclopaedia of American Horticulture*." 4 volumes (reference only).
- * 19. Bailey, L. H.—"Garden Making."
- * 20. Bailey, L. H. and others—"How to make a Flower Garden."
21. Barnes, P. T.—"House Plants and How to Grow Them."
22. Bennett, Ida B.—"Flower Garden." Manual for Amateur Gardener.
23. Bowles, E. A.—"My Garden in the Spring."
24. Bowles, E. A.—"My Garden in Summer."
25. Calthorp, D. C.—"Charm of Gardens" (reference only).
26. Cook, E. T.—"Gardens of England" (reference only).
27. Cook, E. T.—"Perpetual Carnations."
28. Du Cane, Florence—"Flowers and Gardens of Japan" (reference only).
29. Ely, Helena R.—"Woman's Hardy Garden."
30. Felton, R. F.—"British Floral Decoration" (reference only).

- *31 Findlay, Hugh—"House Plants: Their Care and Culture."
32. Fitzgerald, H. P.—"Concise Book of Climbers, Twiners and Wall Shrubs."
33.—"Flower Lore—The Teachings of Flowers—Historical, Legendary, Practical and Symbolical."
34. Greene, M. Louise—"Among School Gardens."
35. Handsyde—"Four Gardens."
36. Hasluck, P. N. (Edit.)—"Greenhouse and Conservatory Construction and Heating."
37. Hemenway, H. D.—"How to Make School Gardens."
38. Hole, S. Reynolds—"Book about Roses."
39. Holland, L. B.—"Garden Blue Book," A manual of the Perennial Garden.
- *40. Hunn, C. E., and Bailey, L. H.—"Practical Garden Book."
41. Ingram, John—"Language of Flowers," or "Flora Symbolica" (reference only).
42. King, Mrs. Francis—"Well-Considered Garden."
43. Lounsberry, Alice—"Garden Book for Young People."
44. McFarland, J. H.—"My Growing Garden."
45. Miller, Louise K.—"Children's Gardens for School and Home."
46. Miller, Wilhelm—"What England can Teach Us about Gardening" (reference only).
47. Parsons, H. G.—"Children's Gardens for Pleasure, Health and Education."
48. Pearson, R. H. (Edit.)—"Carnations and Pinks," by Cook, Douglas and McLeod.
49. Pearson, R. H. (Edit.)—"Lilies," by A. Grove.
50. Pearson, R. H. (Edit.)—"Orchids," by James Obrien.
51. Pearson, R. H. (Edit.)—"Rhododendrons and Azaleas," by Wm. Watson.
- *52. Rexford, Eben E.—"A.B.C. of Gardening."
53. Rogers, W. S.—"Garden Planning."
54. Roland, Arthur—"Farming for Pleasure and Profit" (reference only).
55. Saylor, H. H.—"Book of Annuals."
56. Shelton, Louise—"Seasons in a Flower Garden."
57. Silberrad, Una, and Lyall, Sophie—"Dutch Bulbs and Gardens" (reference only).
58. Thomas, H. H. (Edit.)—"Gardening Difficulties Solved." Expert answers to amateurs' questions.
59. Thomas, H. H.—"Book of Hardy Flowers."
60. Thomas, H. H.—"Bulb Growing for Amateurs."
61. Thomas, H. H.—"Complete Gardeners."
62. Thomas, H. H.—"Garden at Home."
63. Thomas, H. H. (Edit.)—"Gardening for Amateurs." Two volumes.
64. Thomas, H. H.—"Garden Work for Everybody."
65. Thomas, H. H.—"Ideal Garden."
66. Thomas, H. H.—"Rock Gardening for Amateurs."
67. Thomas, H. H.—"Rose Book."
68. Thomas, H. H.—"Round the Year in the Garden."
69. Thomas, H. H.—"Sweet Peas and How to Grow Them."
70. Warner, C. D.—"My Summer in the Garden."
71. Williams, L.—"Gardening." (Hobby Books.)
72. Wright, W. P.—"Beautiful Gardens: How to Make and Maintain Them."
73. Wright, W. P., and Castle, E. J.—"First Steps in Gardening."
74. Wright, W. P.—"Pictorial Practical Carnation Growing."
75. Wright, W. P. (Edit.)—"Pictorial Practical Chrysanthemum Culture."
- *76. Candolle, Alph.—"Origin of Cultivated Plants."
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- *101. Minnesota State Hort. Society—"Trees, Fruits and Flowers of Minnesota, 1912, 1913, 1914" (reference only).
102. Morton, B. P.—"Native Trees of Canada." (Forestry Bulletin 61.)
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MANITOBA HORTICULTURAL AND FORESTRY ASSOCIATION

Incorporated Under Act of Manitoba
Legislature

Life membership, \$10.00. Annual membership, \$1.00 per year. Special 25 cent rate to members of Affiliated Horticultural Societies at Local Points in Manitoba.

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INDEX FOR 1918

Abraham Visits Winnipeg.....	44	Delphinium.....	10, 77
Achillea.....	76	Dry Farming Exhibition, Manitoba Vegetables	
Apples.....	48	at.....	91
Apples, Storage of.....	5	Drying of Fruits and Vegetables.....	83
Aquilegia.....	76	Dumbriel, Mrs., Paper by.....	17
Asparagus.....	18, 24, 55, 63	Dutch Sets.....	13
Aster, Perennial.....	10		
		Endive.....	84
Barratt, Geo., Paper by.....	65		
Beans.....	18, 24, 10, 55, 63	Field Meets.....	33, 42
Beans, Preserving in Salt.....	14	Flickers.....	7
Bedford, S. A., on Potatoes.....	34	Flowers.....	52
Bees.....	27	Flowers, National or State.....	53
Bee-Keepers, Advice to.....	39	Food Regulations.....	40
Bee-Keepers' Meet.....	52	Forestry Farm at Sutherland.....	87
Bee Literature.....	48	Fruit Garden, Notes from.....	49
Beetles, Potato, Poisoning of.....	55	Fruits, New.....	49
Beets.....	11, 18, 24, 63, 84, 85	Fruits, Value in Dietary.....	11
Beet, Leaf.....	14	Fungous Diseases.....	5
Beets, Storage of.....	4		
Birds.....	7, 14	Gaillardia.....	77
Birds, Bulletin on.....	27	Gardens, Back Yard, United States.....	36
Bitter-sweet.....	53	Gardening in Northern Manitoba.....	44
Blanket Plant.....	77	Garden, Location of.....	45
Bleeding Heart.....	77	Garden Show, Winnipeg.....	33
Books on Horticulture.....	91	Garlic.....	84
Bottle, Sowing Seeds with.....	18	Gas Plant.....	77
Boys' and Girls' Clubs.....	11, 39	Germany's War Gardens.....	39
Brodrick, Prof., Report by.....	61, 70	Gooseberries.....	49
Brussels Sprouts.....	24	Grapes.....	49
		Grouse.....	7
Cabbage.....	24, 52, 63, 84, 85		
Cabbage Root Maggot.....	60	Hack, Paper by.....	23
Cabbage, Storage of.....	5	Herbs.....	18
Campanula.....	77	Hewitt, Dr., Honored.....	10
Canning.....	12	Hewitt, Paper by.....	14
Canning Bulletin.....	51	Hoe, Push.....	54
Canning Competition, Competitors in.....	59	Hollyhock.....	76
Canning in Brine.....	43	Home Garden Campaign.....	29
Canterbury Bell.....	77	Honey, Containers for.....	54
Carrots.....	11, 24, 63, 84, 85	Horseradish.....	84
Carrots, Storage of.....	4	Hot Beds and Cold Frames, Bulletin on.....	32
Cauliflower.....	24, 55, 64		
Celery.....	5, 11, 24, 50, 55, 64, 65, 84, 85	Insects.....	6, 30, 60, 62, 74
Champion, Geo., Paper by.....	36	Iris.....	10, 77
Cherries.....	49		
Choke Cherry.....	53	James, E. R., Paper by.....	72
Citron.....	64	Jackson, Prof., Papers by.....	13, 22, 47, 78, 88
Columbine.....	10, 54, 76	Judging Vegetables, Standard for.....	63
Convention, Annual.....	1, 16, 19, 89		
Corn.....	11, 17, 24, 56, 64	King, Jas. B., Paper by.....	45
Cowbirds.....	7	Kohl Rabi.....	13, 84
C.P.R. Gardening.....	33		
Crab Apples.....	48	Lark, Prairie Horned.....	22
Criddle, Paper by.....	6	Larkspur.....	77
Crows.....	7	Lettuce.....	25, 64, 84
Cucumber.....	25, 64	Literature, Horticultural.....	91
Cultivation of Garden.....	45, 47		
Currants.....	49		

INDEX—Continued

Machinery, Garden	17, 44	Resolutions, Convention	21
Macoun, W. T., Papers by	2, 4, 85	Rhubarb	23, 55, 64
Mandan, Meeting at	61	Robin, The	7
Manitoba Horticulturist	41	Roses	61
Marchant Bros., Paper by	65	Rosthern, Horticulture at	50
Marketing the Vegetable Crop	65		
Marrow, Vegetable	26, 64	Salsify	4, 64, 85
Membership	33	Sauerkraut	69
Mennonite Village, Garden in	51	Scott, Sask., Horticulture at	51
Mitchener, Paper by	60	Seeds	2, 13, 46
Morden Exhibition	82	Seed, Amount to Sow	3
Munro, Paper by	50	Seed Drill	17
Mushrooms	56	Seeds, per ounce	3
Musk, Fragrant	38	Shrubs	52
		Shutt, Paper by	55
National Flower	10	Skunk, Habits of the	6
Nepawa Exhibition	75	Soil for Gardens	45
Neilon, Bulletin by	18	Soldiers' Gardening	33, 57
		Souris Horticultural Society	34, 86
Olts, Paper by	28	Sowing	17, 46
Onions	4, 11, 13, 17, 25, 52, 64, 81	Spinach	11, 26, 64
Onion Maggot	30	Spruce	52, 53
		Squash	11, 23, 64, 84
Pansies	15	Standard for Judging Vegetables	63
Parsley	26, 64, 84	Stephens, H., Paper by	43
Parsnips	4, 11, 17, 25, 64, 84, 85	Stevenson, A. P., Papers by	19, 61, 76
Peas	11, 25, 51, 55, 64	Stonewall Horticultural Society	35
Peas, Sweet	18	Storage of Vegetables	84
Peony	10, 42, 77	Strawberries	5, 11, 49, 50, 67
Peppers	26	St. Vital, Prize Display by	58
Perennials	50, 76	Sweet Peas	18
Phlox	77	Swiss Chard	14
Pines	52		
Plants, New	49	Tomatoes	11, 18, 25, 50, 61, 67, 77, 84
Plums	48	Transplanting	15, 46
Poplars, Russian	52	Trillium	10
Poppy, Oriental	77	Turnips	4, 11, 26, 64, 84, 85
Potatoes	11, 34, 38, 43, 51, 54, 55, 64		
Potato Beetles	74	Vacant Lot Gardening	4, 36, 37, 44, 53, 71
Potato Bulletin	31	Vegetables	17
Potato Conference	15	Vegetables, Food Value of	11, 55
Potatoes, Cooking	87	Vegetable Garden, the Farm	45
Potato Diseases	47, 78	Vegetable Growing in South-Western Manitoba	28
Potatoes, Early	2	Vegetable Marrow	26, 64
Potato Flour	88, 90	Vegetables, Preservation by Fermentation and	
Potatoes, Food Value of	75	Salting	68
Potato Industry, Advisory Council on	19	Vegetables, Profit in Growing	28
Potato Machinery	44	Vegetable Seed	85
Potatoes, Marketing of	70	Vegetables Standard for Judging	63
Potato "Seed"	72, 73	Vegetable Storage	84, 85
Potatoes, Soil for	72	Vegetables Varieties of	23
Potato, Souris Society Boosts	38	Vegetables, Wintering of	4
Potatoes, Sprouting in the Sunlight	38		
Potatoes, Storage of	4, 59, 84	War Garden Achievements	68
Potato Yields	12, 34, 63	"War-Time Gardens in Manitoba"	39
Premium List	32	Wheel Hoe	17
Pumpkins	26, 64, 84	Whellams, Paper by	28
		White Crabs	6
Radish	26, 64, 84	Winnipeg Gardens	36, 41, 58
Raspberries	94	Winnipeg Garden Show	57
Recreational Interest in Gardening	36	Wires, Attaching to Trees	8
		Women in Gardening	17, 71

The Manitoba Horticultural and Forestry Association

is a Provincial Organization incorporated under Special Act of the Legislature of Manitoba. Its object is to encourage Horticulture by the holding of meetings, publication of literature, compilation of facts in relation to horticulture, distribution of trial plants and by any other practical means.

Life Membership is obtained on payment of \$10.00.

Annual Membership (direct) \$1.00 per year.

Under the charter of The Manitoba Horticultural and Forestry Association, affiliated horticultural societies may be organized at local points. Paid up members of such affiliated societies are admitted into full membership in the Manitoba Horticultural and Forestry Association upon payment to the latter of 25 cents per year.

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